EPCRA Section 313 Toxic Release Inventory (TRI) Reporting
Naval Air Station North Island
Reporting Year 2020

1.0 PURPOSE

This document summarizes the results of Toxic Release Inventory (TRI) compliance reporting efforts for Naval Air Station North Island (NASNI) for Reporting Year (RY) 2020. Annual TRI reporting is governed by regulations established under Section 313 of the Emergency Planning and Community Right-to-Know Act (EPCRA Section 313), as interpreted by United States (U.S.) Department of Defense (DoD) and Department of Navy (Navy) policy and guidance. This document was prepared by the Multi-Media Environmental Compliance Group (MMEC Group) under Contract Number N62473-16-D-2405, Delivery Order Number N6247318F4764.

2.0 LOCATION

NASNI is in San Diego County, California (CA), on the tip of the Silver Strand Peninsula, southwest and across the San Diego Bay from the City of San Diego, and adjacent to the City of Coronado.

3.0 MISSION

The mission of NASNI is to maintain and operate facilities for, and provide services and material support to, operations of aviation activities, units of the operating forces of the Navy, and other activities and units designated by the Chief of Naval Operations. Extensive activities such as aircraft and equipment maintenance, training, military housing, personnel support, and recreational areas fall under the control of NASNI.

4.0 PRIMARY ORGANIZATIONS/ACTIVITIES LOCATED AT THE FACILITY

NASNI is host to 23 aircraft squadrons and 80 additional tenant commands and activities, including the Fleet Readiness Center Southwest (FRCSW), the largest aerospace employer in San Diego.

NASNI supports a variety of Navy aircraft, including attack helicopters, jet fighters, and cargo planes. The installation’s air field has more than 230 aircraft and its quay wall is home port to aircraft carriers.

The following is a list of the major organizations on base that are relevant to TRI reporting.

- FRCSW
- Naval Supply Systems Command (NAVSUP) Fleet Logistics Center (FLC) Fuels Division
- Aircraft Intermediate Maintenance Department (AIMD)
- Test Cell Center
- Southwest Regional Maintenance Center (SWRMC)
- Industrial Water Treatment Plant/Oil Recovery Plant (IW/OW)
- Naval Air Forces Pacific (AIRPAC)
- Commander Naval Air Forces Pacific (CNAP) Code N432F
- Various fixed-wing aircraft and helicopter squadrons
- Various ships
- Naval Air Systems Command (NAVAIR)
- Port Operations

- Naval Facilities Engineering Systems Command Southwest (NAVFAC SW)
- Steam and Electricity Co-generation Plant (COGEN Plant)
- Navy Exchange (NEX) and Government vehicle filling stations
- Puget Sound Naval Shipyard (PSNS) Detachment
- Small Arms Range (SAR)

5.0 RECENT TRI FORM R REPORTING HISTORY

NASNI submitted U.S. Environmental Protection Agency (USEPA) Form R reports for the following chemicals/years:

- Ammonia (2013–2018)
- Lead (2001–2019)
- Dichloromethane (methylene chloride) (2001–2009, 2011, 2012, 2015–2017)
- Methyl isobutyl ketone (MIBK) (2000–2019)
- Naphthalene (2004–2012, 2014, 2016, 2019)
- Methyl ethyl ketone (2000–2003, de-listed in 2004)
- Nickel (2000 – 2011, 2013–2015)
- Ethylene glycol (2000, 2001)
- Ethylbenzene (2004–2015)
- Benzene (2005–2015)
- Sodium dimethyldithiocarbamate (2007–2009, 2017-2019)
- Phenol (2012, 2015)

6.0 TRI THRESHOLD DATA FOR OTHERWISE USED AND PROCESSED CHEMICALS

TRI requires submittal of a Form R for any listed toxic chemical exceeding one of the following thresholds:

- 25,000 pounds (lb) per year for chemicals manufactured onsite
- 25,000 lb per year for chemicals processed onsite
- 10,000 lb per year for chemicals otherwise used onsite
- 100 lb per year for per- and polyfluoroalkyl substances (PFAS)
- Chemical-specific thresholds for persistent bioaccumulative toxic (PBT) chemicals[1]
  - 0.1 gram per year for dioxin and dioxin-like compounds
  - 10 lb per year for benzo[g,h,i]perylene, chlordane, heptachlor, hexachlorobenzene, isodrin, mercury, mercury compounds, octachlorostyrene, pentachlorobenzene, polychlorinated biphenyls (PCBs), and toxaphene
  - 100 lb per year for aldrin, lead, lead compounds, methyoxychlor, pendimethalin, polycyclic aromatic compounds (PACs), tetrabromobisphenyl A, and trifluralin

Section 7321 of the National Defense Authorization Act (NDAA) for fiscal year 2020 (P.L.116-92) added 172 individual PFAS chemicals to the TRI list of chemicals with an effective

[1] USEPA TRI instructions indicate that PBT chemical quantities are to be reported to the nearest tenth of a pound, rather than the nearest pound for all non-PBT TRI chemicals. This convention is followed throughout this report.

date of January 1, 2020. RY2020 Form R reporting is required for any of these PFAS chemicals that individually exceed the 100-lb-per-year usage quantity threshold. The NASNI TRI threshold evaluation for these chemicals is presented in Section 6.6.

Per USEPA instruction, the TRI manufactured, processed, and otherwise used threshold evaluations are performed independently. For example, the amount of an individual TRI chemical manufactured is not counted toward the amount processed or the amount otherwise used.

From a TRI perspective, toxic chemicals are primarily otherwise used at NASNI. There is some processing of toxic chemicals and, to a lesser extent, toxic chemical manufacture in the form of combustion byproducts (discussed in Section 8.0). Otherwise used and processed toxic chemicals at NASNI are addressed in the remainder of Section 6.0 and summarized in Section 7.0.

Hazardous materials for most NASNI organizations are distributed from the NAVSUP FLC Hazardous Material Minimization (HAZMIN) Center at Building 1206. TRI chemical usage associated with hazardous materials issued from the HAZMIN Center is addressed in Section 6.1. Key NASNI organizations that do not get their hazardous materials from the HAZMIN Center are the NAVSUP FLC Fuels Division, FRCSW, SWRMC, PSNS, and SAR. Products used for fire suppression are also not obtained from the HAZMIN Center. These organizations are addressed separately in Sections 6.2 through 6.7. Additionally, Sections 6.8 and 6.9 address TRI chemicals in waste processing activities at NASNI that must be considered for the TRI reporting threshold evaluation.

6.1 HAZMIN Center

Data regarding 2020 TRI chemical quantities issued to NASNI activities through the HAZMIN Center were obtained from the Enterprise Resource Planning (ERP) database by Charles Roiz of NAVSUP FLC. Table 1 presents these data.

ERP is a data management system implemented by NAVSUP FLC in 2012. It tracks HAZMIN Center issuance of hazardous materials to individual organizations on base and off base. Information captured includes date of issue, number of containers issued, and total issue weight. Chemicals present in each hazardous material issue are tracked using Safety Data Sheet (SDS) information maintained within the ERP. Quantities of individual chemicals issued to NASNI work centers and shops can be determined for the calendar year with the ERP Usage Report (ZRMIM0010). When more detail is required to track a specific chemical, the ERP Transaction History Report (ZRMMD0006) can be used to identify the shops using the chemical and the specific hazardous materials in which the chemical is present.

NAVSUP FLC personnel ran the ERP Usage Report for calendar year 2020 at NASNI. MMEC Group personnel sorted and summed these data to yield individual chemical issue quantities (by Chemical Abstracts Service [CAS] number) for each chemical present in the hazardous materials issued during the year. From these data, TRI chemical issues for 2020 were compiled using MMEC Group’s comprehensive listing of TRI chemicals and compound categories by CAS number.

Only “301” and “501” transactions from the HAZMIN Center were extracted from the ERP Usage Report. These transactions represent hazardous material issues from the HAZMIN Center to the work centers (301 “bin issues”) and direct issues to the work centers that do not physically pass through the HAZMIN Center (501 “issues”). Scrapped items (“551”) and bin-to-bin transfers (“309”) were not extracted from the ERP Usage Report as that would constitute double counting according to NAVSUP FLC personnel.

Table 1. TRI Chemical Quantities Calculated from Hazardous Material Issued from the HAZMIN Center

CAS #	TRI Chemical	2020 Total Chemical Issued (lb)
1344-28-1	Aluminum Oxide	61
7664-41-7	Ammonia	132
7440-36-0	Antimony	2
N010	Antimony Compounds	25
N040	Barium Compounds	251
71-43-2	Benzene	4
71-36-3	n-Butanol	28
7440-47-3	Chromium	---
N090	Chromium Compounds	916
7440-50-8	Copper	3
N100	Copper Compounds	---
98-82-8	Cumene	4
111-42-2	Diethanolamine	147
N120	Diisocyanates	31
122-39-4	Diphenylamine	36
100-41-4	Ethylbenzene	37
107-21-1	Ethylene Glycol	656
N230	Glycol Ethers	336
110-54-3	n-Hexane	37
7439-92-1	Lead	77.5
N420	Lead Compounds	51
N450	Manganese Compounds	3,797
7439-97-6	Mercury	0
N458	Mercury Compounds	---
67-56-1	Methanol	54
75-09-2	Methylene Chloride	48
108-10-1	Methyl Isobutyl Ketone	63
91-20-3	Naphthalene	2
7440-02-0	Nickel	28
N495	Nickel Compounds	7
108-95-2	Phenol	27
128-04-1	Sodium Dimethyldithiocarbamate	---
7632-00-0	Sodium Nitrite	31
108-88-3	Toluene	330
95-63-6	1,2,4-Trimethylbenzene	46
1330-20-7	Xylene	141
7440-66-6	Zinc	1,343
N982	Zinc Compounds	287

CAS = Chemical Abstracts Service; lb = pound(s); TRI = Toxic Release Inventory

The results in Table 1 do not include TRI chemicals issued to ships ported at NASNI or other offsite locations. Materials issued to ships from the HAZMIN Center become part of the ship's operation and are not counted toward the shore installation's threshold. The following quotation is from the Office of the Chief of Naval Operations Environmental Readiness Program Manual (OPNAV M-5090.1), Chapter 26-1.3, page 26-3:

> *Any toxic chemical stored or used aboard a ship while in port does not become part of the shore facility's threshold calculations and is not reported by the shore facility even if reporting is triggered. Material maintained under the ship's custody is not subject to any EPCRA reporting requirements.*

The total quantities of lead and lead compounds presented in Table 1 do not include lead or lead compound quantities from batteries in the ERP Usage Report. Motor vehicle batteries are covered under the TRI motor vehicle maintenance exemption and/or the article exemption. Other batteries are also covered under the article exemption. Also, sulfuric acid and hydrochloric acid are not included in Table 1, because only aerosol or gaseous forms of these chemicals are considered TRI chemicals. As issued from the HAZMIN Center, these chemicals are in liquid form.

To ensure that operations known to use TRI chemicals were fully accounted for, the NASNI Industrial Wastewater (IW) treatment plant's use of Hi-Chem HMP (a.k.a. Metal Grabber) was investigated. According to Noreas Environmental Services (NES), the contractor that operates the plant, 9.75 drums of this material were used in 2020.[2] This material has been found in the ERP data in prior years; however, the 2020 data show no records of it being issued to the IW. Each drum of Metal Grabber weighs 649 lb and contains 40 percent (%) sodium dimethyldithiocarbamate (a TRI chemical CAS 128-0-41), which translates into 2,531 lb of sodium dimethyldithiocarbamate use in 2020.[3] This usage will be accounted for in the NASNI otherwise used chemical threshold evaluation summary in Section 7.0, Table 13.

Additionally, NASNI Air Operations personnel checked dampening fluid (containing 60% ethylene glycol) additions to flight line arresting gear units during 2020. This shop is responsible for maintaining these units at NASNI. There were no change-outs of any arresting gear fluid at NASNI in 2020. A total of 20 gallons (gal) of dampening fluid were added to Charlie gear in 2020. [4] A review of the ERP Usage Report did not show the issue of dampening fluid (coolant) to NAVAIR during 2020, and it is assumed that the coolant was already on hand. The total ethylene glycol used in dampening fluid in 2020 is as follows (where 9.17 lb/gal is the density of the dampening fluid):

- 20 gal x 0.60 x 9.17 lb/gal = 110 lb ethylene glycol

This additional amount of ethylene glycol use is accounted for in the otherwise used threshold in Section 7.0, Table 10.

6.2 Fuels

Fuels at NASNI are managed by NAVSUP FLC Fuels Division and include jet propellant (JP) 5, diesel fuel, biodiesel, gasoline, and aviation gasoline (AVGAS). Most fuel use at NASNI is covered under either the TRI motor vehicle maintenance exemption or the personal use

[2] Email from Ellen Nelson of NES, Inc., March 17, 2021.

[3] ERP data have shown sodium dimethyldithiocarbamate present in this material at 20%. MMEC Group confirmed with the Hi-Chem HMP SDS from May 18, 2015 (most recent SDS), that sodium dimethyldithiocarbamate is present at < 40%.

[4] Email from Dan Medina, Arresting Gear Supervisor, NASNI Air Operations Department (danilo.medina@navy.mil, 619-545-5223), May 11, 2021.

exemption. The following subsections address each of these fuels and their contribution to the NASNI TRI threshold evaluation.

6.2.1 JP5

JP5 is received from Defense Fuel Supply Point (DFSP) Point Loma via pipeline and stored in aboveground storage tanks at the NAVSUP FLC Fuels Division. Most of the fuel is pumped into ground refueling vehicles at the Truck Loading Station for transfer directly to aircraft and Jet Engine Test Cells (JETCs) at NASNI as needed. Some of the fuel is pumped directly to hot pit refueling areas and then directly into aircraft. In 2020, 12,397,739 gal were distributed. Use at NASNI accounted for 11,527,546 gal of JP5 in 2020. The remainder of the fuel was transferred to Naval Outlying Landing Field (NOLF) Imperial Beach (870,193 gal) for use in military aircraft under the operational control of NASNI.

JP5 contains quantities of naphthalene at a concentration above its TRI de minimis concentration level (0.1%); however, most of the JP5 use is exempt at NASNI under the motor vehicle maintenance exemption. JP5 use in JETCs and transient aircraft is not covered by the motor vehicle maintenance exemption and must be accounted for in the TRI threshold evaluation as otherwise used. Also, quantities provided to U.S. Customs and Border Protection (CBP) operations at NASNI must be accounted for as processed because this organization is a non-DoD federal entity.

The following are the only non-exempt uses of JP5 at NASNI:

- JP5 in transient aircraft (otherwise used)
- JP5 in JETCs operated by FRCSW and AIMD (otherwise used)
- JP5 issued to CBP (processed)

JP5 in Transient Aircraft

Transient aircraft at NASNI are managed by the Air Operations (Air Ops) T-Line; however, they are fueled by the NAVSUP FLC Fuels Division, as are all aircraft on base. The T-Line makes no distinction between aircraft arriving at NASNI for mission-oriented purposes (e.g., NASNI-based aircraft, airlifts delivering personnel and equipment, and aircraft on base for training) and those arriving for refueling purposes only. Fueling of aircraft for mission-oriented purposes is exempt from TRI reporting under the motor vehicle maintenance exemption in accordance with Navy TRI guidance.[5] However, fuel provided to aircraft that are at NASNI solely for refueling purposes (i.e., “gas-and-go”) is not exempt from TRI reporting.

Based on extensive discussions with the NAVSUP FLC Fuels Division Fuel Operations Supervisor (Gilbert Perez), there is no way to determine the exact amount of fuel provided to aircraft that are considered “transient” as defined by the Navy’s TRI guidance (i.e., gas-and-go). In prior years, he estimated that no more than 5% of total JP5 issued on base goes to transient/gas-and-go aircraft.[6] Without more accurate information, it is assumed that 5% of the JP5 distributed at NASNI was used for transient/gas-and-go aircraft in 2020. Thus, 5% of the 11,527,546 gal of JP5 distributed at NASNI is considered non-exempt (576,377 gal).

JP5 in Jet Engine Test Cells

According to NAVSUP FLC Fuels Division records, FRCSW used 56,472 gal of JP5 in its JETCs in 2020. Note that FRCSW, as part of the final FRCSW testing process, also uses JP5 to

[5] *How to Consider Fuel Thresholds under EPCRA Section 313*, June 2010, page 5. This is an addendum to the Navy’s *Getting Started with the Emergency Planning and Community Right-to-Know Act (EPCRA) – A Basic Guidance Document for Navy Facilities,* May 2009.

[6] Conversation between Gilbert Perez, Fuel Operations Supervisor (619-545-9026) and Richard Davis of MMEC Group, June 6, 2014.

fuel aircraft for test flights to check that repairs were performed correctly. JP5 use in the JETCs is not exempt; however, JP5 used in aircraft testing is exempt.

According to Navy TRI guidance, the refueling of DoD installation motor vehicles and the refueling of motor vehicles owned or under the operational or custodial control of a DoD installation are covered under the motor vehicle maintenance exemption.[7]

According to NAVSUP FLC Fuels Division records, AIMD used 19,713 gal of JP5 in its JETCs to test repairs in 2020.

Thus, the 2020 total use of JP5 in JETCs at NASNI was 76,185 gal (i.e., 56,472 + 19,713 gal).

JP5 issued to CBP

According to NAVSUP FLC Fuels Division records, aircraft owned by the CBP at NASNI were issued a total of 301,282 gal of JP5 in 2020. This amount must be counted toward the TRI processed chemical threshold.

Summary of Non-Exempt JP5

The following is a summary of the non-exempt JP5 use at NASNI:

- Transient aircraft = 576,377 gal (otherwise used)
- JETCs = 76,185 gal (otherwise used)
- CBP = 301,282 gal (processed)
- Total non-exempt JP5 otherwise used = 652,562 gal
- Total non-exempt JP5 processed = 301,282 gal

To identify TRI chemicals present in JP5, the supplier for NASNI was identified through emails with the Defense Logistics Agency (DLA) personnel overseeing JP5 supplied to military facilities in the southwest. According to personnel from DLA Energy Americas West, all JP5 supplied to NASNI during calendar year 2020 originated from the Valero Benicia Refinery near San Francisco, CA.[8]

The Valero SDS for jet fuels indicates only ranges of chemical constituents for a wide variety of jet fuels (e.g., Jet A, JP8, and Jet Fuel Stock), including JP5. April Twu (Environmental Engineer, Valero Refining Company – CA, Benicia Refinery) was contacted for more precise information on TRI chemicals in the JP5 supplied to DFSP Point Loma. She provided the following JP5 composition data that Valero uses for their TRI calculations at the refinery:[9]

- Naphthalene at 0.37%
- Ethylbenzene at 0.075% (less than de minimis limit of 0.1% for this chemical)
- Benzene at 0.005% (less than de minimis limit of 0.1% for this chemical)
- Xylene at 0.48% (less than de minimis limit of 1% for this chemical)
- Toluene at 0.06% (less than de minimis limit of 1% for this chemical)

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[7] *Consolidated EPCRA Policy for DoD Installations, Munitions Activities, and Operation Ranges*, September 21, 2006, page 19. Also, Figure 5-11 on page 32 of *Getting Started with the Emergency Planning and Community Right-to-Know Act, A Basic Guidance Document for Navy Facilities*, May 2009, indicates that the motor vehicle maintenance exemption cannot be applied to depot-level maintenance activities such as FRCSW. However, Figure 5-11 also states that fueling of motor vehicles under the control of the facility (as is the case at FRC) is exempt. This question was raised during the spring 2009 Navy TRI training sessions and the instructors' consensus was that this use is exempt.

[8] Email dialog with Jenifer Bertone jennifer.bertone@dla.mil, Lead Supply Planner DLA Energy Americas West, March 10, 2021.

[9] Email dialog with April Twu, Staff Environmental Engineer, Valero Benicia Refinery, april.twu@valero.com, March 29, 2021.

- 1,2,4-Trimethylbenzene at 0.57% (less than de minimis limit of 1% for this chemical)
- Cyclohexane at 0.08% (less than de minimis limit of 1% for this chemical)

Only naphthalene is present in the JP5 at a concentration above its TRI de minimis level. Applying the naphthalene percentage to the 652,562 gal of otherwise used, non-exempt JP5 at NASNI yields:

- 652,562 gal x 0.815 x 8.34 lb/gal x .0037 = 16,411 lb naphthalene

Applying the naphthalene percentage to the 301,282 gal of processed non-exempt JP5 at NASNI yields:

- 301,282 gal x 0.815 x 8.34 lb/gal x .0037 = 7,577 lb naphthalene

Please note that 0.815 is the specific gravity of JP5.

6.2.2 Diesel Fuel and Biodiesel

Diesel fuel and biodiesel are received from NGL Crude Pinnacle, Inc. via tank truck and are stored in NAVSUP FLC Fuels Division tanks. From these tanks, tank trucks are used to deliver diesel fuel and biodiesel to (1) a tank at the Government vehicle filling station; (2) ground support equipment (GSE); (3) security boats; (4) emergency generators and other stationary equipment; and (5) the CBP. Most NASNI uses of diesel fuel and biodiesel (motor vehicle fuel) are exempt from TRI reporting, except for use in non-self-propelled GSE and emergency generators. Also, the small quantity of these fuels provided to the CBP is counted as processed.

The following are the only non-exempt uses of diesel fuel and biodiesel at NASNI:

- Diesel fuel in non-self-propelled GSE (FRCSW and AIMD) (otherwise used)
- Diesel fuel in generators and other stationary equipment (otherwise used)
- Diesel fuel and biodiesel issued to CBP (processed)

Non-self-propelled GSE in service at AIMD and FRCSW is estimated to be 25% of all GSE in service, based on previous discussions with personnel at the AIMD GSE shop. Diesel fuel use in non-self-propelled GSE is not exempt from reporting because this equipment does not qualify as a motor vehicle. According to NAVSUP FLC Fuels Division records, AIMD used 13,613 gal of diesel fuel in GSE during 2020, and FRCSW used 8,550 gal of diesel fuel in GSE. Assuming that 25% was used in non-self-propelled GSE yields 5,541 gal of non-exempt diesel fuel use.

There are some non-motor-vehicle/non-exempt uses of diesel fuel at NASNI such as emergency generators, welders, pumps, air compressors, and non-self-propelled tactical support equipment (e.g., mobile air conditioners, aircraft start carts, and hydraulic units). Diesel fuel use information for these various items for 2020 (4,782 gal) was obtained from Albert Mar, who is responsible for air emission inventory efforts for NAVFAC SW.[10]

The composition of diesel fuel used at NASNI was obtained from several Exxon Mobil SDSs. Naphthalene and ethylbenzene are the only two TRI chemicals present in the diesel fuel, and both make up 0.1 to 1% of the composition (0.55% for TRI purposes). Applying these percentages to the 10,323 gal (5,541 + 4,782) of non-exempt diesel fuel otherwise used at NASNI in 2020 yields:

- 10,323 gal x 0.815 x 8.34 lb/gal x 0.0055 = 386 lb naphthalene
- 10,323 gal x 0.815 x 8.34 lb/gal x 0.0055 = 386 lb ethylbenzene

[10] Email from Albert Mar, May 3, 2021.

Additionally, the NAVSUP FLC Fuels Division provided 56 gal of diesel fuel and 0 gal of biodiesel to the CBP in 2020. The naphthalene and ethylbenzene present in this fuel must be counted toward the TRI processed threshold:

- 56 gal x 0.815 x 8.34 lb/gal x 0.0055 = 2 lb naphthalene
- 56 gal x 0.815 x 8.34 lb/gal x 0.0055 = 2 lb ethylbenzene

6.2.3 Gasoline

Gasoline is received by the NAVSUP FLC Fuels Division from IPC, Inc. via tank truck. None is made available for public purchase; it is used only in NASNI-based vehicles, according to NAVSUP FLC Fuels Division. Users must have a “pro-key” to access the fuel at the Government Vehicle Filling Station. Typically, gasoline contains numerous TRI chemicals with concentrations above de minimis levels; however, its use in facility motor vehicles is covered under the motor vehicle maintenance exemption. Some gasoline is used for non-motor-vehicle, non-exempt activities at NASNI, such as operation of the gasoline-powered engines used with each aircraft arresting gear system on NASNI runways.

The following are the only non-exempt uses of gasoline at NASNI:

- Gasoline in arresting gear and other stationary equipment (otherwise used)
- Gasoline issued to the CBP (processed)

Albert Mar, who is responsible for air emission inventory efforts for NAVFAC SW, indicated that 1,116 gal of gasoline were used in 2020 for non-motor-vehicle purposes such as fueling internal combustion engines for arresting gear and portable welding units. This information was combined with typical gasoline chemical composition data to yield the following TRI chemical use data:

- 3% ethylbenzene x 1,116 gal x 6.17 lb/gal = 207 lb ethylbenzene
- 2.5% benzene x 1,116 gal x 6.17 lb/gal = 172 lb benzene
- 3% n-hexane x 1,116 gal x 6.17 lb/gal = 207 lb n-hexane
- 1% naphthalene x 1,116 gal x 6.17 lb/gal = 69 lb naphthalene
- 3% 1,2,4-trimethylbenzene x 1,116 gal x 6.17 lb/gal = 207 lb 1,2,4-trimethylbenzene
- 7.5% toluene x 1,116 gal x 6.17 lb/gal = 516 lb toluene
- 7.5% xylene x 1,116 gal x 6.17 lb/gal = 516 lb xylene

Additionally, the NAVSUP FLC Fuels Division provided 99 gal of gasoline to the CBP in 2020. The TRI chemicals present in this fuel must be counted toward the TRI processed threshold:

- 3% ethylbenzene x 99 gal x 6.17 lb/gal = 18 lb ethylbenzene
- 2.5% benzene x 99 gal x 6.17 lb/gal = 15 lb benzene
- 3% n-hexane x 99 gal x 6.17 lb/gal = 18 lb n-hexane
- 1% naphthalene x 99 gal x 6.17 lb/gal = 6 lb naphthalene
- 3% 1,2,4-trimethylbenzene x 99 gal x 6.17 lb/gal = 18 lb 1,2,4-trimethylbenzene
- 7.5% toluene x 99 gal x 6.17 lb/gal = 46 lb toluene
- 7.5% xylene x 99 gal x 6.17 lb/gal = 46 lb xylene

6.2.4 AVGAS

AVGAS is received from Lancair Corp by tank truck and contains toluene, benzene, lead compounds, and ethylene bromide in concentrations above their TRI de minimis levels. The NAVSUP FLC Fuels Division distributes this fuel (1,463 gal in 2020) to a contractor (Flight International) that flies aircraft carrying DoD personnel to and from the NASNI Air Terminal to San Clemente Island (SCI), exclusively. Similarly, AVGAS is provided to another DoD contractor (Institute for Wildlife Studies) so that they can reach SCI and perform their studies (500 gal in 2020). These uses fall under the TRI motor vehicle maintenance exemption because the aircraft receiving the AVGAS are under the operational control of NASNI as they fly to and from SCI. AVGAS is also provided to aircraft participating in air shows at NASNI, a use that is also TRI-exempt because the aircraft are under the operational control of NASNI while onsite. This use is also covered under the personal use exemption because the Morale, Welfare, and Recreation (MWR) department puts on the air shows at the base.

The only non-exempt uses of AVGAS include (1) dispensing to Air Force tank trucks for shipment to March Air Force Base (AFB), Air National Guard, and transient aircraft (otherwise used); and (2) dispensing to the CBP aircraft (processed).

According to NAVSUP FLC Fuels Division records, 0 gal of AVGAS were provided to Air Force tank trucks or the Air National Guard in 2020, and 729 gal were provided to transient aircraft. TRI chemicals present in this fuel must be counted toward the otherwise used threshold.[11] AVGAS chemical composition data were obtained from an SDS from Lancair:

- 10% toluene x 729 gal x 5.84 lb/gal = 426 lb toluene
- 0.5% benzene x 729 gal x 5.84 lb/gal = 21 lb benzene
- 0.106% ethylene dibromide (EDB) x 729 gal x 5.84 lb/gal = 5 lb EDB
- 0.106% lead compounds x 729 gal x 5.84 lb/gal = 4.5 lb lead compounds

According to NAVSUP FLC Fuels Division records, CBP aircraft at NASNI were issued a total of 234 gal of AVGAS in 2020. This amount must be counted toward the TRI processed chemical threshold:

- 10% toluene x 234 gal x 5.84 lb/gal = 137 lb toluene
- 0.5% benzene x 234 gal x 5.84 lb/gal = 7 lb benzene
- 0.106% ethylene dibromide x 234 gal x 5.84 lb/gal = 1 lb ethylene dibromide
- 0.106% lead compounds x 234 gal x 5.84 lb/gal = 1.4 lb lead compounds

6.2.5 Summary of TRI Chemical Use in Non-Exempt Fuels

Tables 2 and 3 summarize TRI chemical quantities from Sections 6.2.1 through 6.2.4.

[11] Navy's *How to Consider Fuel Thresholds under EPCRA Section 313*, page 5, June 2010.

Table 2. NASNI Fuel Contributions to the TRI Otherwise Used Chemical Reporting Threshold

	Naphthalene lb	Ethylbenzene lb	Benzene lb	Hexane lb	1,2,4-TMB lb	Toluene lb	Xylene lb	EDB lb	Lead Compounds lb
Jet Fuel	16,411	--	--	--	--	--	--	--	--
Diesel/Biodiesel	386	386	--	--	--	--	--	--	--
Gasoline	69	207	172	207	207	516	516	--	--
AVGAS	--	--	21	--	--	426	--	5	4.5
Total	16,866	593	193	207	207	942	516	5	4.5

AVGAS = aviation gasoline; EDB = ethylene dibromide; lb = pound(s); TMB = trimethylbenzene

Table 3. NASNI Fuel Contributions to the TRI Processed Chemical Reporting Threshold

	Naphthalene lb	Ethylbenzene lb	Benzene lb	Hexane lb	1,2,4-TMB lb	Toluene lb	Xylene lb	EDB lb	Lead Compounds lb
Jet Fuel	7,577	--	--	--	--	--	--	--	--
Diesel/Biodiesel	2	2	--	--	--	--	--	--	--
Gasoline	6	18	15	18	18	46	46	--	--
AVGAS	--	--	7	--	--	137	--	1	1.4
Total	7,585	20	22	18	18	183	46	1	1.4

AVGAS = aviation gasoline; EDB = ethylene dibromide; lb = pound(s); TMB = trimethylbenzene

6.3 Fleet Readiness Center Southwest (FRCSW)

Dustin Martinz of FRCSW provided the following information on TRI chemical use by FRCSW in 2020. These data are exclusive of JP5 use:

Processed

- Antimony – 123 lb
- Chromium – 2,741 lb
- Chromium compounds – 1,840 lb
- Copper – 5,833 lb
- Lead – 1,927 lb
- Manganese – 0 lb
- Nickel – 24,422 lb
- Nickel compounds – 111 lb
- Zinc compounds – 0 lb

Otherwise Used

- Ethylbenzene – 103 lb
- Glycol ethers – 3,608 lb
- Methanol – 198 lb
- Methylene chloride – 1,005 lb

- Methyl isobutyl ketone – 25,139 lb
- N-butyl alcohol – 281 lb
- Nitric Acid – 6,556 lb
- Phenol – 358 lb
- 1,2,4-Trimethylbenzene – 69 lb
- Toluene – 6,125 lb
- Xylene – 3,243 lb

Many of the metals used at FRCSW are considered processed and are subject to the 25,000-lb-per-year threshold versus the 10,000-lb-per-year threshold for otherwise used chemicals. From the *Consolidated EPCRA Policy for DoD Installations, Munitions Activities, and Operation Ranges*, September 21, 2006, page 15:

> *"Process" or "Processing" means the preparation of a toxic chemical (or member of a toxic chemical category), after its manufacture, for distribution in commerce. Processing also includes the intentional incorporation of a toxic chemical into a product or serviced item. Repackaging (e.g., pouring contents of a 55-gal drum into smaller containers) a toxic chemical and sending it to another DoD installation is processing, and repackaging and other processing of toxic chemicals within a facility for distribution off a DoD installation is subject to EPCRA Section 313 threshold quantity requirements. The key term here is "or serviced items" – thus metals incorporated into aircraft and aircraft parts by FRCSW are processed versus otherwise used.*

Non-exempt uses of JP5 and diesel fuel at FRCSW are addressed in Section 6.2. FRCSW receives its fuel from the NAVSUP FLC Fuels Division.

FRCSW performs chrome plating and one material used in this process is known to contain PFAS chemicals. According to the SDS for Fumetrol 21 LF2 used in the chrome plating tanks, polyfluorosulfonic acid, CAS # 27619-97-2, is contained in the product; however, this PFAS chemical is not a TRI chemical.[12]

6.4 Southwest Regional Maintenance Center (SWRMC) Contractors

SWRMC is the Navy organization that oversees contractors that perform ship repairs at NASNI. Toxic chemicals used by contractors working for SWRMC on ships in drydock are not exempt from TRI reporting (in contrast to toxic chemicals used by sailors in their routine operation and maintenance of watercraft). To quantify NASNI SWRMC contractor toxic chemical usage, data from SWRMC 2020 hazardous material usage spreadsheets were coupled with toxic chemical composition data extracted from the SDSs for the items used. SWRMC requires contractors to provide information on hazardous material usage and chemical composition to meet reporting requirements under state and local air pollution regulations. The SWRMC data are divided into six material categories, discussed individually in Sections 6.4.1 through 6.4.6 and summarized in Tables 4 and 5 in Section 6.4.7.

[12] Product information provided by Dustin Martinez, Hazardous Waste Manager FRCSW, to Natalie Baum, MMEC Group, on November 24, 2020.

6.4.1 SWRMC Welding Materials

A total of 2,998 lb of welding rods and other similar materials were used by SWRMC contractors in 2020 at NASNI. Usage data for individual welding materials were combined with chemical composition data in the 2020 SWRMC Weld Rod Emissions Inventory Excel® Workbook to yield the TRI chemical usage quantities in Table 4. These metals are counted toward the processed threshold because they are intended to stay with the product of the operation – repaired ships.

6.4.2 SWRMC Solvents

A total of 613 gal of solvents were used by SWRMC contractors in 2020 at NASNI. Usage data for individual solvents (obtained from the 2020 SWRMC Coatings-Solvents Excel® Workbook) were combined with chemical composition data obtained from SDSs for the solvents to yield the TRI chemical usage quantities in Table 5:

6.4.3 SWRMC Abrasives

A total of 1,796 tons of abrasive materials were used by SWRMC contractors in 2020 at NASNI, according to the 2020 Abrasive Blasting Excel® Workbook:

- "Kleen Blast" Copper Slag (produced by CanAm Minerals, Inc.) accounted for 1,110 tons
- Steel shot accounted for 687 tons
- Garnet accounted for 0 tons
- Coal Slag accounted for 0 tons

The SDS for "Kleen Blast" indicates no TRI chemicals at concentrations above their TRI de minimis levels, except aluminum oxide at 3.9% and lead at 3.3 milligrams per kilogram (mg/kg). Lead does not have a de minimis limit. Aluminum oxide is a TRI chemical only when present in fibrous form. Per USEPA TRI instructions, fibrous refers to a man-made form of aluminum oxide that is processed to produce strands or filaments that can be cut to various lengths depending on the application. The SDS indicates that "Kleen Blast" is an iron-calcium-silicate (complex silicate) with fused oxides of silicon, iron, calcium, aluminum, and magnesium. USEPA TRI guidance indicates that aluminosilicates, aluminoborosilicates, zeolites, aluminum silicate hydroxides, and other related materials (either naturally occurring or prepared by fusion at high temperatures) are not considered fibrous.[13] Therefore, only lead need be accounted for in the Kleen Blast:

- 1,110 tons x 2,000 lb/ton x 3.3 lb/1,000,000 lb = 7.3 lb lead

An SDS for steel shot (prepared by Ervin Industries, Inc.) indicates manganese present at 0.35–1.2%, which yields 3,734 lb of manganese counted toward the NASNI otherwise used threshold.[14]

6.4.4 SWRMC Paints

A total of 13,190 gal of paints were used by SWRMC contractors in 2020 at NASNI. Usage data for individual paints (obtained from the 2020 SWRMC Coatings-Solvents Excel® Workbook) were combined with chemical composition data obtained from their SDSs to yield the TRI chemical usage quantities presented in Tables 4 and 5.

[13] *EPCRA Section 313 Questions and Answers, 2019 Consolidation Document*, EPA 745-B-19-001, April 2019, page 214, Question 526.

[14] Because the concentration of manganese in the steel shot is a range and straddles the de minimis limit of 1.0%, only the portion of manganese that is above the de minimis limit would need to be factored into this non-exempt use of manganese. *Toxic Chemical Release Inventory Reporting Forms and Instructions Revised 2020 Version, page 26.*

6.4.5 SWRMC Diesel Fuel Use in Non-Motor Vehicle Internal Combustion Engines

In 2020, 30,393 gal of diesel fuel were used by SWRMC contractors at NASNI in various devices—some of which are self-propelled and others that are not. This value was obtained from the 2020 SWRMC EPCRA Fuel Usage Excel® Workbook. Only fuel used in motor vehicles (i.e., self-propelled) is considered exempt under EPCRA Section 313. For simplicity, it was assumed that all 30,393 gal of diesel fuel were used in non-motor vehicles. The composition of diesel fuel used at the NASNI Fuel Farm (based on SDSs from Exxon Mobil) was used to estimate diesel fuel composition at NASNI SWRMC. Naphthalene and ethylbenzene are the only two TRI chemicals present in the diesel fuel, and both make up 0.1% to 1% of the composition. Naphthalene and ethylbenzene use in SWRMC diesel equipment was calculated on the basis of a density of 7.3 lb/gal and percentage of 0.55% and is presented in Table 5.

6.4.6 SWRMC Adhesives

Approximately 15,486 lb of adhesives were used by SWRMC contractors in 2020 at NASNI. Usage data for individual adhesives (obtained from the 2020 SWRMC Emissions Inventory Adhesives Report Excel® Workbook) were combined with chemical composition data obtained from their SDSs to yield the TRI chemical usage quantities in Table 4.

6.4.7 Summary for SWRMC at NASNI

Summing the TRI chemical usage totals from the preceding six categories (Sections 6.4.1 through 6.4.6) yields the following:

Table 4. SWRMC TRI Processed Chemicals

Chemical	Welding lb	Paints lb	Total lb
Manganese	60	0	60
Chromium	107	0	107
Nickel	33	0	33
Copper	4	0	4
Aluminum	25	0	25
Zinc Compounds	0	2,183	2,183
Copper Compounds	0	0	0
Nickel Compounds	0	0	0
Antimony Compounds	0	0	0

lb = pound(s)

Table 5. SWRMC TRI Otherwise Used Chemicals

Chemical	Solvents lb	Paints lb	Adhesives lb	Abrasives lb	Diesel Engine lb	Total
1,2,4-Trimethylbenzene	1,296	614	0	0	0	1,910
Ethylbenzene	0	2	0	0	1,220	1,222
Methyl isobutyl ketone (MIBK)	0	0	0	0	0	0
n-Butanol	1,263	957	0	0	0	2,220
Toluene	0	0	30	0	0	30
Xylene	0	0	0	0	0	0
Cumene	185	0	0	0	0	185
Methanol	0	0	0	0	0	0
Lead	0	0	0	7.3	0	7.3
Manganese	0	0	0	3,734	0	3,734
Naphthalene	0	0	0	0	1,220	1,220
Bisphenol A	0	0	0	0	0	0
Diisocyanates	0	0	0	0	0	0
Dibutyl Phthalate	0	0	21	0	0	21
n-Hexane	0	0	20	0	0	20

lb = pound(s)

6.5 The Puget Sound Naval Shipyard (PSNS) Detachment at NASNI

The PSNS Detachment at NASNI obtains hazardous materials through its parent organization. The 2020 TRI chemical usage data for PSNS operations at NASNI were obtained from Heidi Stingle, San Diego Air Program Manager for PSNS (360-476-95729). These data were derived from the Hazardous Material Management System (HMMS) database used by PSNS and provided to MMEC Group personnel in a spreadsheet format.

The results are summarized as follows:

- 1,2,4-Trimethylbenzene – 44 lb
- Benzene – 0 lb
- Chromium – 40 lb
- Chromium compounds – 133 lb
- Copper – 135 lb
- Cumene – 1 lb
- Ethylbenzene – 15 lb
- Ethylene glycol – 17 lb
- Glycol ethers – 5 lb
- Manganese – 52 lb
- Methyl alcohol – 0 lb
- Methyl isobutyl ketone – 0 lb
- Naphthalene – 0 lb
- Nickel – 114 lb

- N-Hexane – 23 lb
- N-Butyl alcohol – 65 lb
- Sodium nitrite – 0 lb
- Toluene – 24 lb
- Xylene – 44 lb
- Zinc – 2,527 lb
- Zinc Compounds – 710 lb

6.6 PFAS Used in Fire Suppression

For RY2020, 172 PFAS chemicals were added to the list of TRI chemicals that must be considered in the TRI threshold analysis. PFAS chemicals have been a critical ingredient in aqueous film-forming foam (AFFF) used for fighting petroleum fires at airfields, aboard ships, and in industrial processes; however, the use of these chemicals is being phased out and restricted. AFFF is kept on hand at several locations, such as aircraft hangars and fire trucks, throughout NASNI for use in emergency fire suppression. These locations are listed in Table 6.

For TRI purposes, reportable uses of AFFF at NASNI are as follows:

- Emergency use in fire suppression
- Firefighting training activities
- Additions of AFFF to tanks/systems

During 2020, there were no uses of AFFF for fire suppression or in firefighting training.[15]

A large-scale effort to replace older AFFF products with a Military Specification (MILSPEC)-compliant AFFF in fire suppression systems has been in affect across Commander, Naval Region Southwest (CNRSW) installations, including NASNI. As a result, several systems/tanks equipped with AFFF containing PFAS at concentrations above 800 parts per billion ppb have been replaced with the MILSPEC-compliant AFFF.[16] Several of these fire suppression systems were drained and refilled at NASNI during 2020, as presented in Table 6. The amounts of PFAS chemicals in the MILSPEC-compliant AFFF added to these systems is counted towards the TRI reporting threshold.

[15] Email from Chief Anderson of Federal Fire at NASNI to MMEC Group on May 28, 2021.
[16] Data provided by Christina Graulau, NAVFAC SW Environmental Compliance Core, to MMEC Group on February 4, 2021.

Table 6. AFFF Additions to NASNI Units in 2020

Building	Location	New AFFF Brand	Replacement Volume (gal)
1474	Room 128	Phos-Chek 3%	1,200
1474	Room 128	Phos-Chek 3%	1,200
1474	Room 165	Ansulite AFC-3MS	1,200
1474	Room 1665	Ansulite AFC-3MS	1,200
1480	U.S. Customs Maintenance	Ansulite AFC-3MS	500
1480	U.S. Customs Maintenance	Ansulite AFC-3MS	500
1477	Hangar	Ansulite AFC-3MS	400
1477	Hangar	Phos-Chek 3%	400
1477	Hangar	Ansulite AFC-3MS	400
1477	Hangar	Phos-Chek 3%	500
1477	Hangar	Ansulite AFC-3MS	500
1477	Hangar	Ansulite AFC-3MS	500
1481	Hangar	Ansulite AFC-3MS	300
1481	Hangar	Ansulite AFC-3MS	500
1481	Hangar	Ansulite AFC-3MS	500
340	HSC-4	Phos-Chek 3%	6,200
502	CAARNG	Ansulite AFC-3MS	600
502	CAARNG	Ansulite AFC-3MS	600

AFFF = aqueous film-forming foam; gal = gallon(s); U.S. = United States

A total of 17,200 gal of MILSPEC-compliant AFFF were added to the systems listed in Table 6 at NASNI in 2020. The SDS for Ansulite AFC-3MS does list two proprietary chemical types as components of the mixture (polyfluorinated alkyl polyamide and polyfluorinated alkyl quaternary amine chloride), but does not provide CAS numbers for these items to determine if they are TRI-listed PFAS chemicals.[17] The SDS for Phos-Chek 3% does not list any PFAS chemicals. However, as directed by Navy TRI guidance on PFAS chemicals, when AFFF manufactured after 2016 is used (as it was in 2020), a concentration of 25 ppb is to be used to determine PFAS chemical use.[18] Applying this concentration to the quantity of AFFF added in 2020 yields:

- 17,200 gal AFFF x 3.78 liters per gallon (L/gal) x 25 micrograms per liter (µg/L) x 0.0022 lb/gram / 1,000,000 micrograms per gram (µg/g) = 0.0035 lb of PFAS

Without individual PFAS chemicals identified in the new AFFF added, the 25-ppb concentration is used for the collective quantity of PFAS chemicals. Given that the 100-lb-per-year TRI threshold was not exceeded for the collective quantity of PFAS chemicals, it was concluded that no individual PFAS chemical quantity exceeded the reporting threshold for RY2020.

[17] SDS for Ansulite 3% AFFF dated January 2019 lists polyfluorinated alkyl polyamide (proprietary) at 1-5% and polyfluorinated alkyl quaternary amine chloride (proprietary) at 0.1-1%.

[18] *Guidance Document for PFAS/PFOA Reporting Under the EPCRA,* December 31, 2020.

Additionally, the SDSs for both AFFF products above list 2-(2-butoxyethoxy)ethanol (CAS No. 112-34-5) present in the mixture at 10-30%. This chemical falls under the glycol ether TRI chemical category (N230) and its use needs to be considered toward the otherwise used threshold evaluation. Using the mid point of the chemical composition range, 20%, yields the following the quantity of 2-(2-butoxyethoxy)ethanol in the AFFF added in 2020;

- 17,200 gal Ansulite AFC-3MS AFFF x 1.02 x 8.34 lb/gal x 0.20 lb 2-(2-butoxyethoxy)ethanol / lb AFFF = 29,263 lb 2-(2-butoxyethoxy)ethanol

Note 1.02 is the specific gravity of the AFFF as listed on the SDS.

6.7 NASNI Small Arms Range (SAR)

Munitions use at the NASNI SAR is tracked by type (e.g., 9-millimeter [mm] cartridges and 12-gauge [ga] shotgun cartridges). The annual results for 2020 were provided by James Woods (Range Manager for the NASNI SAR, [619-545-9994]) and entered by MMEC Group personnel into the DoD Toxics Release Inventory Data Delivery System (TRI-DDS) to calculate TRI chemical use. NASNI SAR TRI-DDS chemical use results for RY2020 were as follows:

- Aluminum (fume or dust) – 1 lb
- Antimony – 128 lb
- Antimony compounds – 6 lb
- Arsenic – 1 lb
- Barium compounds – 12 lb
- Copper – 1,612 lb
- Dibutyl phthalate – 48 lb
- Diphenylamine – 12 lb
- Lead (PBT) – 6,927.5 lb
- Lead compounds (PBT) – 14.4 lb
- Nitroglycerin – 127 lb

6.8 Wastes from Offsite Managed Through the NASNI Oily Waste and Industrial Waste Treatment Plants

Processing and treatment of wastes received from offsite must be addressed in the TRI threshold evaluation per USEPA instructions. At NASNI, wastes from both onsite and offsite are brought into either of the Oily Waste treatment plant (NASNI OW) for oil recovery or the Industrial Waste treatment plant (NASNI IW) for treatment. Distinguishing the offsite waste quantities from onsite waste quantities received at these plants is a challenging exercise, as discussed below.

The NASNI OW receives wastes primarily via pipelines from the piers at NASNI. A smaller portion is received from tank truck deliveries. Wastes received from ships include bilge water, compensation water, contaminated fuel, general industrial wastewater, and other oily wastes. The NASNI OW also receives oily water from the Naval Base San Diego (NBSD) drydock contractors (BAE, National Steel and Shipbuilding Company [NASSCO]) and recovered oil and sludge from the Naval Amphibious Base (NAB) and Naval Base Point Loma (NBPL) oily water treatment plants. Most of the waste received from ships is generated while the ships are docked at the piers and undergoing maintenance (some for many months), although some is generated while the ships are out at sea and transferred to the NASNI OW upon arrival of the ship at NASNI. Also, some wastes are received from onsite shops, but the vast majority is from ships.

The NASNI IW receives wastes exclusively from tank truck deliveries and smaller container waste deliveries. Industrial operations at the FRCSW are the primary waste contributor; however, Resource Conservation and Recovery Act (RCRA) and non-RCRA wastes from ships and other Navy installations are treated at the facility.

6.8.1 NASNI OW

The NASNI OW is a large operation treating nearly 12 million gal of waste per year and generating nearly 700,000 gal of recovered oil that are sold to offsite entities. The oily wastewater is first pumped through a grit removal process into Load Equalization Tanks, where oil is allowed to separate from the water and is transferred to Recovered Oil Storage Tanks. Water from the Load Equalization Tanks is then pumped to an oil/water separation process (plate separators and induced air floatation) where DWT 6234, DWT 672E, and sodium hydroxide are added to help break oily emulsions. These materials do not contain any TRI chemicals. The treated water is then discharged to City of San Diego sanitary sewers. Sludge removed from the water is pumped to a holding tank, where it is combined with grit removed from the water earlier in the process. The sludge and grit are then pumped to a filter press for dewatering. The pressed sludge is sent offsite as a hazardous waste, and the water removed from the sludge is pumped back to the Load Equalization Tanks to be processed again. Air emissions from the NASNI OW are controlled via carbon absorption (“Biotrickler”) and spent carbon from this device is periodically sent offsite for regeneration.

The USEPA definition of a facility does not include water, and thus the waste received from ships must be addressed as wastes received from offsite. Additionally, DoD guidance indicates that materials stored and used on a ship that remain under the ship’s ownership are not considered part of the shore-based facility. Thus, bilge water and other oily wastes received at the NASNI OW from ships must be considered received from offsite.

Per USEPA instructions, TRI chemicals present in wastes received from offsite into the facility for disposal, stabilization (without subsequent distribution in commerce), or treatment for destruction must be counted toward the otherwise used threshold. However, Question and Answer #20 from USEPA’s *EPCRA Section 313 Questions and Answers: Addendum to the Revised 1998 Version as of December 2004* states the following:

> *20. If a toxic chemical is derived from the phase separation of wastes received from offsite and that chemical is subsequently incorporated into a product at the facility and then distributed into commerce, has the toxic chemical been processed or otherwise used?*
>
> *If a facility receives materials containing toxic chemicals from offsite for further waste management and the toxic chemicals are treated for destruction, stabilized, or disposed onsite, the facility would be otherwise using the toxic chemicals. However, during phase separation the toxic chemical in the waste is not actually destroyed. Furthermore, the toxic chemical is incorporated into a product at the facility and is further distributed in commerce (e.g., retorted mercury sold for reuse in thermometers and mercury switches).*
>
> *Thus, as long as the toxic chemical coming from the waste is not stabilized, treated for destruction, or disposed, it would not be otherwise used because it is neither treated for destruction nor disposed onsite. Because it is distributed in commerce, it would be processed. Once a facility exceeds a threshold for a particular toxic chemical, amounts of that chemical that are released or otherwise managed as a waste must be calculated for all onsite activities.*

Because the NASNI OW is basically a phase separation process with the resulting oil sold into commerce, the TRI chemicals present in the recovered oil would be considered processed and are subject to the 25,000-lb-per-year TRI reporting threshold. This waste would include, at a minimum, all of the water-insoluble organic TRI chemicals present in the oil. It is unclear whether the TRI inorganic chemicals (e.g., metals and metal compounds) would also be considered processed. As a conservative approach, it is assumed that these inorganic TRI chemicals must be included in the otherwise used threshold evaluation (10,000 lb per year).

Data characterizing the volume and TRI chemical composition of the various waste streams entering the NASNI OW are not readily available. However, an estimate of the amount of TRI chemicals entering the NASNI OW can be made by estimating the quantity exiting in the recovered oil, plus the amount discharged to sanitary sewers and the amount in the dewater sludge sent offsite.

The 2020 quantity of oil recovered from the NASNI OW was 665,343 gal. The quantities of TRI chemicals present in the recovered NASNI OW oil were estimated using laboratory analytical results from samples of the recovered oil.[19] The results are presented in the Table 7.

Table 7. NASNI OW Recovered Oil TRI Chemical Quantities

Chemical	Concentration (mg/L)	Chemical Mass in Recovered Oil (lb)
Benzene	4	24
Naphthalene	541	3,000
Ethylbenzene	119	660
1,2,4-Trimethylbenzene	635	3,521
Toluene	52	290
m/p-Xylene	452	2,503
o-Xylene	265	1,469
Methylene Chloride	5	29
Phenanthrene	90	499
Arsenic	0.3	2
Barium	0.4	2
Cadmium	0.1	1
Chromium	0.3	2
Copper	3	17
Lead	0.35	1.9
Nickel	0.4	2
Zinc	16	87

lb = pound(s); mg/L = milligram(s) per liter

The 2020 quantity of treated water discharged from the NASNI OW to the City of San Diego sanitary sewer system was 12,202,800 gal. The amount of TRI chemicals in the NASNI OW effluent were estimated from the laboratory analytical results obtained from periodic sampling.[20] The results are presented in Table 8.

Table 8. NASNI OW Effluent TRI Chemical Quantities

Chemical	Concentration (mg/L)	Chemical Mass in OW Effluent (lb)
Benzene	0.02	1.5

[19] NASNI recovered oil chemical composition data obtained from laboratory analysis of recovered oil samples. For organics and metals, the samples were collected from the NASNI OW recovered oil tanks in March and July 2020.

[20] NASNI OW effluent composition data obtained from four samples collected throughout 2020.

Ethylbenzene	0.05	4.7
Methylene Chloride	0.01	1.3
Toluene	0.03	3.0
Vinyl Chloride	0	0
Naphthalene	0.03	35
Phenol	0.32	32
Cadmium	0.64	65.3
Chromium	0.02	2.2
Copper	0.02	2.4
Lead	0.01	0.5
Nickel	0.07	7.5
Zinc	0.12	13.6

lb = pound(s); mg/L = milligram(s) per liter; OW = oily waste

The 2020 quantity of dewatered sludge generated from the NASNI OW and sent offsite for disposal was 32,900 lb. TRI chemical quantities in the sludge were estimated from laboratory analytical results from an October 2020 sample. The results are presented in Table 9.

Table 9. NASNI OW Dewatered Sludge TRI Chemical Quantities

Chemical	Concentration (mg/kg)	Chemical Mass in OW Sludge (lb)
Benzene	1.2	0.0
Ethylbenzene	2.7	0.1
m/p-Xylene	6.0	0.2
o-Xylene	3.0	0.1
Toluene	2.7	0.1
Naphthalene	4.3	0.1
Methylene Chloride	0.0	0.0
Arsenic	1.8	0.1
Barium	1,100	36.2
Cadmium	25	0.8
Chromium	48	1.6
Cobalt	6.3	0.2
Copper	1,500	49.4
Lead	20	0.7
Molybdenum	82	2.7
Nickel	570	18.8
Silver	5.4	0.2
Vanadium	3.6	0.1
Zinc	3,600	118.4
1,2,4 Trimethylbenzene	4.5	0.1

lb = pound(s); mg/kg = milligrams per kilogram(s); OW = oily waste

The 2020 quantity of spent carbon ("dry carbon") sent offsite for regeneration from the Biotrickler was 12,400 lb. Based on analytical data from a sample of NASNI IW/OW spent carbon from March 2010, the amount of TRI chemicals leaving the OW in spent dry carbon are estimated in Table 10.[21]

Table 10. NASNI OW Spent Dry Carbon TRI Chemical Quantities

Chemical	Concentration (mg/kg)	Chemical Mass in Spent Carbon (lb)
Benzene	3.5	0
Ethylbenzene	40	1
m/p-Xylene	160	2
o-Xylene	59	1
Toluene	47	1
Methylene Chloride	3.8	0

lb = pound(s); mg/kg = milligram(s) per kilogram

Additionally, it is estimated that the NASNI OW received 3,156 lb of "jacket water" waste from offsite in 2020 (per email from Gilbert Orozco of NES on May 14, 2021) during maintenance of small watercraft. The waste is composed of less than 33% antifreeze (from coolant waste), and the balance is water (any waste containing a higher concentration of this chemical must be managed and ultimately recycled offsite through the NASNI containerized waste program). Conservatively assuming that this waste contains 33% ethylene glycol, it is estimated that 1,044 lb of ethylene glycol entered the NASNI OW in 2020. This amount is counted toward the otherwise used threshold because the ethylene glycol (which is miscible in water) is not intentionally incorporated into the NASNI OW product sold in commerce.

The overall totals of TRI chemicals entering the NASNI OW are thus estimated as follows:

Processed

- Naphthalene – 3,035 lb
- Ethylbenzene – 665 lb
- 1,2,4-Trimethylbenzene – 3,521 lb
- Toluene – 293 lb
- Phenanthrene – 499 lb
- Phenol – 32 lb
- Benzene – 26 lb
- Xylene – 3,976 lb

Otherwise Used

- Nickel – 29 lb
- Cadmium – 67 lb
- Copper – 69 lb
- Cobalt – 0 lb

[21] Toxic characteristic leaching procedure (TCLP) analysis of a June 15, 2012, sample of this waste stream showed no organic contaminants at concentrations above detection limits. TCLP analyses determine only the leachable fraction of specified chemicals in the waste, not the total quantity of each. Thus, although this information indicates that only small quantities of toxic organics are present in this waste, it does not substantiate the conclusion.

- Lead – 3.1 lb
- Chromium – 5 lb
- Barium – 38 lb
- Silver – 0 lb
- Vanadium – 0 lb
- Zinc compounds – 219 lb
- Methylene chloride – 30 lb
- Ethylene glycol – 1,044 lb

6.8.2 NASNI IW

The NASNI IW is a complex treatment system designed primarily to treat metal plating waste from FRCSW and a variety of RCRA hazardous and non-hazardous waste received from offsite as well as from NASNI shops. Three waste streams compose the output from the IW: (1) treated wastewater discharged to the City of San Diego sanitary sewers; (2) filter-pressed sludge; and (3) spent wet carbon used to treat the wastewater. Note that carbon used to absorb contaminants from the air from the NASNI IW is addressed under the NASNI OW ("dry carbon" from the Biotrickler).

The 2020 quantity of treated water discharged from the NASNI IW to the City of San Diego sanitary sewer system was 1,317,100 gal. The amount of TRI chemicals in the NASNI IW effluent was estimated from the laboratory analytical results from samples taken in February, July, and December 2020. The results are presented in Table 11.

Table 11. NASNI IW Effluent TRI Chemical Quantities

Chemical	Concentration (mg/L)	Chemical Mass in IW Effluent (lb)
Methylene chloride	0	0
4-Nitrophenol	0	0
Bis(Ethylhexyl)phthalate	0	0
Chloroethane	0	0
Ethylbenzene	0	0
Toluene	0	0
Cadmium	0.5	4.9
Chromium	0.1	1.0
Copper	0	0
Lead	0.3	2.8
Nickel	0.2	2.4
Zinc	0.05	0.5

lb = pound(s); IW = industrial waste; mg/L = milligram(s) per liter

The 2020 quantity of dewatered sludge generated from the NASNI IW and sent offsite for disposal was 72,040 lb. The quantities of TRI chemicals in the NASNI IW sludge were estimated from the laboratory analytical results from samples collected in 2020. The results are presented in Table 12.

Table 12. NASNI IW Dewatered Sludge TRI Chemical Quantities

Chemical	Concentration (mg/kg)	Chemical Mass in IW Sludge (lb)
Barium	101	7
Cadmium	225	16
Chromium	1,213	87
Cobalt	10	1
Copper	4,870	351
Lead	114	8.2
Nickel	1,302	94
Zinc	657	47
Carbon Disulfide	4	0
Chlorobenzene	0	0
Chloroform	0	0
Ethylbenzene	0	0
m/p-Xylene	0	0
o-Xylene	0	0
Toluene	0	0
Methylene chloride	0	0
Bis(Ethylhexyl)phthalate	2	0
Naphthalene	0	0
Phenol	6	0

lb = pound(s); IW = industrial waste; mg/kg = milligrams per kilogram(s)

The 2020 quantity of spent wet carbon generated from water treatment at the NASNI IW (i.e., “wet carbon”) and sent offsite for disposal was 0 lb. The only analytical data available for this waste stream were from a toxicity characteristic leaching procedure (TCLP) analysis of a sample taken on May 12, 2013. The analysis showed only very small quantities of methylene chloride present, and thus “wet carbon” is assumed to make no significant contribution to NASNI IW TRI chemical totals.

The estimated overall totals of TRI chemicals entering the NASNI IW are estimated as follows:

- Naphthalene – 0 lb
- Ethylbenzene – 0 lb
- 1,2,4-Trimethylbenzene – 0 lb
- Toluene – 0 lb
- Mercury – 0.0 lb
- Nickel – 96 lb
- Copper – 351 lb
- Xylene – 0 lb
- Lead – 11 lb
- Chromium – 88 lb
- Zinc compounds – 48 lb

- Benzene – 0 lb
- Methylene chloride – 0 lb
- Phenol – 0 lb
- Cadmium – 21 lb
- Cobalt – 1 lb
- Bis(ethylhexyl)phthalate – 0 lb

The amount of TRI chemicals entering the NASNI IW from off base is assumed to be 50% of the preceding values. This amount is a conservative assumption, given that most of the waste (especially metals) entering the NASNI IW is from the FRCSW. Thus, 50% of the preceding values is applied toward the NASNI otherwise used threshold for 2020 (see Table 12, NASNI IW column).

6.9 Wastes from Offsite Managed Through the NASNI Hazardous Waste Center

Containerized wastes (hazardous and non-hazardous) from ships and other Navy facilities in the San Diego metropolitan area are brought onto NASNI for management and subsequent transfer to offsite disposal and recycling facilities. Management activities include inspection, profiling, and repackaging (for certain wastes such as oily debris and paint debris). None of these wastes are recycled, treated, or disposed of at NASNI. They are transferred to contractors that take the wastes offsite for disposal, treatment, energy recovery, or recycling.

Wastes received at NASNI from ships or other facilities that are not repackaged do not need to be considered in the TRI threshold evaluation. This amount includes all wastes such as waste oil and antifreeze received from NBPL and NAB.

Wastes received at NASNI from ships or other facilities that are repackaged would have to be considered within the TRI threshold evaluation only if they were sent offsite for recycling.[22] Furthermore, the USEPA definition of "waste management" stresses that it does not include storage, container transfer, or tank transfer if no recycling, combustion for energy recovery, treatment for destruction, waste stabilization, or release of the chemical occurs at the facility.[23] Given that the containerized waste management program at NASNI does not involve any of these activities, there is no requirement to account for TRI chemicals in the wastes received from ships and other Navy facilities toward the NASNI TRI thresholds.

7.0 TRI CHEMICAL THRESHOLD EVALUATION

Tables 13 and 14 summarize the combined quantity of otherwise used and processed TRI chemicals for RY2020 from the various organizations and data sources described in Section 6.

As presented in Table 13, quantities of lead, glycol ethers methyl isobutyl ketone, and naphthalene exceeded their otherwise used thresholds for 2020. As presented in Table 14, lead quantities exceeded their processed thresholds for 2020. Overall, four chemicals will require RY2020 Form R submittals from NASNI:

- Lead
- Glycol ethers
- Methyl isobutyl ketone

[22] *USEPA EPCRA Section 313 Industry Guidance – RCRA Subtitle C TSD Facilities and Solvent Recovery Facilities*, EPA 745-B-99-004, January 1999, page 3-15, "Repackaging."

[23] *USEPA EPCRA Section 313 Questions and Answers, Revised 1998 Version*, EPA 745-B-98-004, December 1998, page 272.

- Naphthalene

Environmental releases and offsite waste transfers from all non-exempt use, processing, or manufacture of these chemicals during 2020 at NASNI must be accounted for on their respective Form Rs. Per the *Consolidated EPCRA Policy for DoD Installations, Munitions Activities, and Operational Ranges,* September 21, 2006, separate Form Rs for the NASNI SAR (lead only) and the rest of NASNI (all four chemicals) must be prepared.

Table 13. NASNI RY2020 TRI Otherwise Used Chemical Threshold Evaluation Summary Table

CAS #	Chemical	HAZMIN Center (lb)	Fuels (lb)	FRCSW (lb)	SWRMC (lb)	PSNS (lb)	AFFF (lb)	SAR (lb)	NASNI OW (lb)	NASNI IW (lb)	Total (lb)
1344-28-1	Aluminum Oxide	61	---	---	---	---	---	---	---	---	61
7664-41-7	Ammonia	132	---	---	---	---	---	---	---	---	132
7440-36-0	Antimony	2	---	---	---	---	---	128	---	---	130
N010	Antimony Compounds	25	---	---	---	---	---	6	---	---	31
7440-38-2	Arsenic	---	---	---	---	---	---	1	---	---	1
N040	Barium Compounds	251	---	---	---	---	---	12	---	---	263
71-43-2	Benzene	4	193	---	---	---	---	---	---	---	197
80-05-7	Bisphenol A	---	---	---	---	---	---	---	---	---	0
71-36-3	n-Butanol	28	---	281	2,220	65	---	---	---	---	2,594
7440-43-9	Cadmium	---	---	---	---	---	---	---	67	11	78
75-45-6	Chlorodifluoromethane	---	---	---	---	---	---	---	---	---	0
7440-47-3	Chromium	---	---	---	---	40	---	---	5	44	89
N090	Chromium Compounds	916	---	---	---	133	---	---	---	---	1,049
7440-48-4	Cobalt	---	---	---	---	---	---	---	---	0.5	0.5
7440-50-8	Copper	3	---	---	---	135	---	1,612	69	176	1,995
N100	Copper compounds	---	---	---	---	---	---	---	---	---	---
98-82-8	Cumene	4	---	---	185	1	---	---	---	---	190
84-74-2	Dibutyl phthalate	---	---	---	21	---	---	48	---	---	69
111-42-2	Diethanolamine	147	---	---	---	---	---	---	---	---	147
N120	Diisocyanates	31	---	---	---	---	---	---	---	---	31
122-39-4	Diphenylamine	36	---	---	---	---	---	12	---	---	48
100-41-4	Ethylbenzene	37	593	103	1,222	15	---	---	---	---	1,970
106-93-4	Ethylene Dibromide	---	5	---	---	---	---	---	---	---	5
107-21-1	Ethylene Glycol	766	---	--	---	17	---	---	1,044	---	1,827
N230	Glycol Ethers	336	----	3,608	---	5	29,263	---	---	---	33,212
110-54-3	n-Hexane	37	207	---	20	23	---	---	---	---	287
7439-92-1	Lead	77.5	---	---	7.3	---	---	6,927.5	3.1	5.5	7,020.9
N420	Lead Compounds	51	4.5	---	---	---	---	14.4	---	---	69.9
7439-96-5	Manganese	---	---	---	3,734	52	---	---	---	---	3,786

Table 13. NASNI RY2020 TRI Otherwise Used Chemical Threshold Evaluation Summary Table (continued)

CAS #	Chemical	HAZMIN Center (lb)	Fuels (lb)	FRCSW (lb)	SWRMC (lb)	PSNS (lb)	AFFF (lb)	SAR (lb)	NASNI OW (lb)	NASNI IW (lb)	Total (lb)
N450	Manganese Compounds	3,797	---	---	---	---	---	---	---	---	3,797
7439-97-6	Mercury	--	---	---	---	---	---	---	---	---	---
67-56-1	Methanol	54	---	198	---	---	---	---	---	---	252
75-09-2	Methylene Chloride	48	---	1,005	---	---	---	---	30	---	1,083
108-10-1	**Methyl Isobutyl Ketone**	63	---	25,139	---	---	---	---	---	---	25,202
91-20-3	**Naphthalene**	2	16,866	---	1,220	---	---	---	---	--	18,088
7440-02-0	Nickel	28	---	---	---	114	---	---	29	48	219
N495	Nickel Compounds	7	---	---	---	---	---	---	---	---	7
7697-37-2	Nitric Acid	---	---	6,556	---	---	---	---	---	---	6,556
55-63-0	Nitroglycerin	---	---	---	---	---	---	127	---	---	127
N530	Nonylphenol	---	---	---	---	---	---	---	---	---	---
Multiple	PFAS	---	---	---	---	---	---	---	---	---	---
108-95-2	Phenol	27	---	358	---	---	---	---	---	---	385
7440-22-4	Silver	---	---	---	---	---	---	---	---	---	---
128-04-1	Sodium Dimethyldithiocarbamate	---	---	---	---	---	---	---	---	2,531	2,531
7632-00-0	Sodium Nitrite	31	---	---	---	---	---	---	---	---	31
108-88-3	Toluene	330	942	6,125	30	24	---	---	---	---	7,451
95-63-6	1,2,4-Trimethylbenzene	46	207	69	1,910	44	---	---	---	---	2,276
7440-62-2	Vanadium	---	---	---	---	---	---	---	---	---	---
1330-20-7	Xylene	141	516	3,243	---	44	---	---	---	---	3,944
7440-66-6	Zinc (fume or dust)	1,343	---	---	---	2,527	---	---	---	---	3,870
N982	Zinc Compounds	287	---	---	---	710	---	---	219	24	1,240

Note: Chemicals in **bold** text are TRI-reportable chemicals for NASNI for RY2020.

CAS = Chemical Abstracts Service; FRCSW = Fleet Readiness Center Southwest; HAZMIN = Hazardous Minimization; lb = pound(s); NASNI IW = Naval Air Station North Island Industrial Waste treatment plant; NASNI OW = Naval Air Station North Island Oily Waste treatment plant; PSNS = Puget Sound Naval Shipyard; SAR = Small Arms Range; SWRMC = Southwest Regional Maintenance Center

Table 14. NASNI RY2020 TRI Processed Chemical Threshold Evaluation Summary Table

CAS #	Chemical	HAZMIN Center (lb)	Fuels (lb)	FRCSW (lb)	SWRMC (lb)	PSNS (lb)	SAR (lb)	NASNI OW (lb)	NASNI IW (lb)	Total (lb)
7440-36-0	Antimony	---	---	123	---	---	---	---	---	123
N010	Antimony Compounds	---	---	---	---	---	---	---	---	0
N040	Barium Compounds	---	---	---	---	---	---	---	---	0
71-43-2	Benzene	---	22	---	---	---	---	26	---	47
7440-47-3	Chromium	---	---	2,741	107	---	---	---	---	2,848
N090	Chromium Compounds	---	---	1,840	---	---	---	---	---	1,840
7440-50-8	Copper	---	---	5,833	4	---	---	---	---	5,837
N100	Copper Compounds	---	---	---	---	---	---	---	---	0
98-82-8	Cumene	---	---	---	---	---	---	---	---	0
100-41-4	Ethylbenzene	---	20	---	---	---	---	665	---	685
106-93-4	Ethylene Dibromide	---	1	---	---	---	---	---	---	11
7439-92-1	**Lead**	---	---	1,927	---	---	---	---	---	1,927
N420	Lead Compounds	---	1.4	---	---	---	---	---	---	1.4
7439-96-5	Manganese	---	---	---	60	---	---	---	---	60
75-09-2	Methylene Chloride	---	---	---	---	---	---	---	---	0
91-20-3	**Naphthalene**	---	7,585	---	---	---	---	3,035	---	10,620
110-54-3	N-Hexane	---	18	---	---	---	---	---	---	18
7440-02-0	Nickel	---	---	24,422	33	---	---	---	---	24,455
N495	Nickel Compounds	---	---	111	---	---	---	---	---	111
85-01-8	Phenathrene	---	---	---	---	---	---	499	---	499
108-95-2	Phenol	---	---	---	---	---	---	32	---	32
7440-22-4	Silver	---	---	---	---	---	---	---	---	---
108-88-3	Toluene	---	183	---	---	---	---	293	---	476
95-63-6	1,2,4-Trimethylbenzene	---	18	---	---	---	---	3,521	---	3,539
1330-20-7	Xylene	---	46	---	---	---	---	3,976	---	4,022
N982	Zinc Compounds	---	---	---	2,183	---	---	---	---	2,183

Note: Chemicals in **bold** text are reportable chemicals for NASNI for RY2020.

CAS = Chemical Abstracts Service; FRCSW = Fleet Readiness Center Southwest; HAZMIN = Hazardous Minimization; lb = pound(s); NASNI IW = Naval Air Station North Island Industrial Waste treatment plant; NASNI OW = Naval Air Station North Island Oily Waste treatment plant; PSNS = Puget Sound Naval Shipyard; SAR = Small Arms Range; SWRMC = Southwest Regional Maintenance Center

8.0 TRI CHEMICALS MANUFACTURED AS BYPRODUCTS

TRI chemicals are manufactured in small quantities as byproducts when fuel is burned. Navy TRI policy excludes byproducts emitted from motor vehicle tailpipes from inclusion in TRI manufactured chemical quantities; however, combustion byproducts from non-motor-vehicle sources are not excluded.

Tables 15 and 16 present the quantities of TRI chemicals manufactured at NASNI in 2020 from the burning of:

- Natural gas = 52.8 million cubic feet[24] (point of use boilers)
- Diesel fuel = 40,716 gal (from Sections 6.2.2, and 6.4.5)
- Gasoline = 1,215 gal (Section 6.2.3)
- JP5 = 76,185 gal (Section 6.2.1)

Combustion byproduct chemical quantities manufactured were calculated from USEPA AP-42 emission factors. No TRI chemical thresholds for manufactured chemicals were exceeded.

Table 15. TRI Chemicals Manufactured from Natural Gas Combustion at NASNI (2020)

CAS #	TRI Chemical	PBT	Emission Factor (lb/MMscf)	Decimal Equivalent (lb/MMscf)	2020 Natural Gas Use (MMscf/yr)	Chemical Emissions (lb/yr)	TRI Threshold Exceeded?
120-12-7	Anthracene	No	<2.4E-06	0.00000239	52.8	0.0	No
71-43-2	Benzene	No	2.10E-03	0.0021	52.8	0.1	No
25321-22-6	Dichlorobenzene	No	1.20E-03	0.0012	52.8	0.1	No
50-00-0	Formaldehyde	No	7.50E-02	0.075	52.8	4.0	No
91-20-3	Naphthalene	No	6.10E-04	0.00061	52.8	0.0	No
85-01-8	Phenanathrene	No	1.70E-05	0.000017	52.8	0.0	No
108-88-3	Toluene	No	3.40E-03	0.0034	52.8	0.2	No
7440-38-2	Arsenic	No	2.00E-04	0.0002	52.8	0.0	No
7440-39-3	Barium	No	4.40E-03	0.0044	52.8	0.2	No
7440-41-7	Beryllium	No	<1.2E-05	0.0000119	52.8	0.0	No
7440-43-9	Cadmium	No	1.10E-03	0.0011	52.8	0.1	No
7440-47-3	Chromium	No	1.40E-03	0.0014	52.8	0.1	No
7440-48-4	Cobalt	No	8.40E-05	0.000084	52.8	0.0	No
7440-50-8	Copper	No	8.50E-04	0.00085	52.8	0.0	No
7439-96-5	Manganese	No	3.80E-04	0.00038	52.8	0.0	No
7440-02-0	Nickel	No	2.10E-03	0.0021	52.8	0.1	No
7782-49-2	Selenium	No	<2.4E-05	0.000024	52.8	0.0	No
7440-62-2	Vanadium	No	2.30E-03	0.0023	52.8	0.1	No
7439-92-1	Lead	Yes 100 lb/yr	5.00E-04	0.0005	52.8	0.0	No
7439-97-6	Mercury	Yes 10 lb/yr	2.60E-04	0.00026	52.8	0.0	No
191-24-2	Benzo[g,h,I,]perylene	Yes 10 lb/yr	<1.2E-06	0.00000119	52.8	0.0	No

[24] Email from Albert Mar, May 3, 2021.

Table 15. TRI Chemicals Manufactured from Natural Gas Combustion at NASNI (2020) (continued)

CAS #	TRI Chemical	PBT	Emission Factor (lb/MMscf)	Decimal Equivalent (lb/MMscf)	2020 Natural Gas Use (MMscf/yr)	Chemical Emissions (lb/yr)	TRI Threshold Exceeded?
Polycyclic Aromatic Compounds Category (100 lb/yr threshold)							
56-49-5	3-Methylchloranthrene	PAC	<1.8E-06	0.00000179	52.8	0.0	No
57-97-6	7,12-Dimethylbenza(a) anthracene	PAC	<1.6E-05	0.000016	52.8	0.0	
56-55-3	Benz(a)anthracene	PAC	<1.8E-06	0.00000179	52.8	0.0	
50-32-8	Benzo(a)pyrene	PAC	<1.2E-06	0.00000119	52.8	0.0	
205-99-2	Benzo(b)fluoranthene	PAC	<1.8E-06	0.00000179	52.8	0.0	
205-82-3	Benzo(k)fluoranthene	PAC	<1.8E-06	0.00000179	52.8	0.0	
53-70-3	Dibenzo(a,h,)anthracene	PAC	<1.2E-06	0.00000119	52.8	0.0	
193-39-5	Indeno(1,2,3cd)Pyrene	PAC	<1.8E-06	0.00000179	52.8	0.0	
					PAC Total	0.0	

Note: Chemicals in **bold** text are reportable chemicals for NASNI for RY2020.

CAS = Chemical Abstracts Service; lb = pound(s); MMscf = million standard cubic feet; PAC = polycyclic aromatic compound; PBT = persistent bioaccumulative toxic; TRI = Toxic Release Inventory; yr = year

Table 16. TRI Chemicals Manufactured from Non-Motor Vehicle Diesel Fuel, Gasoline, and JP5 Combustion at NASNI (2020)

CAS #	TRI Chemical	PBT	Emission Factor (lb/MMBTU)	Decimal Equivalent (lb/MMBTU)	2020 Diesel and Gasoline Fuel Use (MMBTU/yr)	Chemical Emissions (lb/yr)	TRI Threshold Exceeded?
71-43-2	Benzene	No	9.33 E-04	0.000933	16,424	15.3	No
108-88-3	Toluene	No	4.09 E-04	0.000409	16,424	6.7	No
1330-20-7	Xylenes	No	2.85 E-04	0.000285	16,424	4.7	No
115-07-1	Propylene	No	2.58 E-03	0.00258	16,424	42.4	No
106-99-0	1,3-Butadiene	No	<3.91 E-05	0.00003909	16,424	0.6	No
50-00-0	Formaldehyde	No	1.18 E-03	0.00118	16,424	19.4	No
75-07-0	Acetaldehyde	No	7.67 E-04	0.000767	16,424	12.6	No
107-02-8	Acrolein	No	<9.25 E-05	0.00009249	16,424	1.5	No
91-20-3	**Naphthalene**	**No**	**8.48 E-05**	**0.0000848**	**16,424**	**1.4**	**No**
85-01-8	Phenanthrene	No	2.94 E-05	0.0000294	16,424	0.5	No
120-12-7	Anthracene	No	1.87 E-06	0.00000187	16,424	0.0	No
191-24-2	Benzo(g,h,l)perylene	Yes 10 lb/yr	<4.89 E-07	0.000000488	16,424	0.0	No
Polycyclic Aromatic Compounds Category (100 lb/yr threshold)							
56-55-3	Benz(a)anthracene	PAC	1.68E-06	0.00000168	16,424	0.0	
50-32-8	Benzo(a)pyrene	PAC	1.88E-07	0.000000188	16,424	0.0	
205-99-2	Benzo(b)fluoranthene	PAC	<9.91E-08	0.0000000991	16,424	0.0	
205-82-3	Benzo(k)fluoranthene	PAC	<1.55E-07	0.000000155	16,424	0.0	
53-70-3	Dibenzo(a,h,)anthracene	PAC	<5.83E-07	0.000000583	16,424	0.0	
193-39-5	Indeno(1,2,3-cd)Pyrene	PAC	<3.75E-07	0.000000375	16,424	0.0	
					PAC Total	0.0	No < 100 lb/yr

Note: Chemicals in **bold** text are reportable chemicals for NASNI for RY2020.

CAS = Chemical Abstracts Service; MMBTU = million BTU (BTU – British Thermal Unit); PAC = polycyclic aromatic compounds; PBT = persistent bioaccumulative toxic; TRI = Toxic Release Inventory

Diesel fuel: 139,200 BTU/gal

Gasoline: 125,000 BTU/gal

JP5: 139,200 BTU/gal

Total diesel fuel use in non-motor vehicles for 2020 = 40,716 gal

Total gasoline use in non-motor vehicles for 2020 = 1,215 gal

Total JP5 use in non-motor vehicles for 2020 = 76,185 gal

[(139,200 BTU/gal x 40,716 gal/yr) + (125,000 BTU/gal x 1,215 gal/yr) + (139,200 BTU/gal x 76,185 gal/yr)] x 1 MMBTU/1,000,000 BTU = 16,424 MMBTU/yr]

9.0 FORM R CALCULATIONS – NAPHTHALENE

9.1 Air Releases of Naphthalene from Non-Exempt Fuel Use

A total of 25,671 lb of naphthalene were processed (7,585 lb) or otherwise used (18,086 lb) in non-exempt JP5, diesel fuel, and gasoline activities (including contributions from the FLC Fuels Division and SWRMC). Most of the naphthalene in fuels is combusted during use. A small amount will evaporate to air from storage tanks and during fueling operations, and other small quantities will be lost from small spills and leaks. Approximately 93% of the 25,671 lb is from JP5 use. Given that air releases of naphthalene from diesel fuel and gasoline will not be significantly different from releases from JP5 on a per-gal basis, air releases of naphthalene from non-exempt fuel use are estimated below, assuming that all 25,671 lb are in JP5.

JP5 at NASNI is received from the DFSP Point Loma via pipeline, stored in large tanks at the NAVSUP FLC Fuels Division, transferred to fuel delivery trucks, and then transferred directly into aircraft or small local/satellite storage tanks. For non-exempt JP5, transfers are to transient aircraft, CBP aircraft, and satellite storage tanks at the FRCSW and AIMD JETCs. The following tanks are used at the NAVSUP FLC Fuels Division to store JP5:

- 4 tanks, each with 600,000 gal capacity
- 5 tanks, each with 4,000–12,000 gal capacity

The four large tanks receive the JP5 from DFSP Point Loma, while the others serve as day tanks and defuel tanks. The four primary tanks provide a total capacity of 2,400,000 gal. Because the quantity of non-exempt JP5 is only 953,844 gal of a total 11.5 million gal used in 2020, it is assumed that 8.3% of the JP5 storage capacity is used for non-exempt JP5 (196,800 gal). Thus, to model the situation for air emissions, one storage tank (196,800 gal capacity) is assumed to be dedicated to non-exempt JP5.

Naphthalene in JP5 is released to air primarily during filling of the following:

- NAVSUP FLC Fuels Division storage tanks (via the DFSP Point Loma pipeline)
- On-base fuel delivery trucks (via the storage tanks)
- Fuel tanks of transient and CBP aircraft and satellite fuel storage tanks at the FRCSW and AIMD JETCs (via the on-base fuel delivery trucks)

It is also released from leaks from pumps, valves, and fittings in piping used to transfer the fuel.

These air releases were estimated using the USEPA *Look-up Tables for Estimating Toxic Release Inventory Air Emissions from Chemical Distribution Facilities* (EPA-745-R-99-005), March 1999. This reference is appropriate, given that JP5 handling at the NAVSUP FLC Fuels Division is very similar to the process of a chemical distributor (receipt, storage in the main tanks, and transfer of a liquid into containers). The reference provides tables to estimate the various categories of air releases from this process based on the throughput of the chemical in question (i.e., the quantity of the chemical passing through the process). The tables are based on AP-42 storage tank air release algorithms, SOCMI emission factors for piping components, and standard engineering factors for air release from container (i.e., vehicle fuel tank) filling.

The tables can be applied to mixtures of chemicals (such as JP5) by assuming that each chemical component is “un-mixed” and only the throughput quantity of the pure chemical is used. This approach works very well for most organic chemicals (such as those in JP5), but not so well for polar chemical compounds. Also, the look-up tables assume that no air emission control systems are in place, as is the case at the NAVSUP FLC Fuels Division.

Applying the naphthalene look-up table (page A-45 of EPA-745-R-99-005) to non-exempt JP5 at NASNI yields the following:

- Quantity of naphthalene throughput in non-exempt JP5 = 25,671 lb

By addressing only the naphthalene in the non-exempt JP5, the capacity of the 196,800-gal tank “shrinks” proportionally to the concentration of naphthalene in the JP5:

- 196,800 gal x 0.0037 = 728 gal ≅ 700 gal

Thus, in the simulation, one tank has a capacity of 700 gal through which 25,671 lb of pure naphthalene passes during the year. However, the lowest throughput on the naphthalene look-up table is 50,000 lb-per-year, which is used to conservatively estimate naphthalene air releases in this situation.

A1 – Filling emissions from the on-base fuel delivery trucks, the transient aircraft fuel tanks, and the satellite JP5 tanks:

> *For 50,000 lb throughput = 1 lb naphthalene release (extrapolated from the naphthalene look-up table). This value must be multiplied by the geographical correction factor for southern California of 1.2, yielding 1.2 lb naphthalene.*
>
> *This factor (A1) should be doubled to account for not only filling the on-base fuel delivery trucks, but also filling the transient aircraft fuel tanks and the satellite tanks with JP5 from the fuel delivery trucks. Thus, A1 = 1.2 x 2 = 2.4 lb naphthalene.*

A2 – Piping component leaks during delivery of JP5 to the on-base fuel delivery trucks, the transient aircraft fuel tanks, and the satellite JP5 tanks:

> *For 50,000 lb throughput = 1 lb naphthalene (extrapolated from the naphthalene look-up table). A geographical correction factor is not applicable to this release vector. However, this value also should be multiplied by 2 to account for losses between the main tank and the delivery trucks as well as losses between the delivery trucks and the aircraft or satellite holding tanks. Thus, A2 = 1 x 2 = 2 lb naphthalene.*

A3 – Working and breathing emissions for main storage tank:

> *For 50,000 lb throughput = 1 lb naphthalene (from the naphthalene look-up table for a 5,000 gal tank). The emissions for a 5,000-gal tank and 10,000-gal tank are the same; assume that the same applies to an 800-gal tank. This amount must be multiplied by the geographical correction factor for southern California of 1.2, yielding 1.2 lb.*

A4 – Piping component leaks – delivery of liquid to main storage tank:

> *For 50,000 lb throughput = 1 lb naphthalene (extrapolated from the naphthalene look-up table). A geographical correction factor is not applicable to this release vector.*

Point source air releases = A1 + A3 = 2.4 + 1.2 = 3.6 lb

Non-point source emissions = A2 + A4 = 2 + 1 = 3 lb

9.2 Naphthalene Released from the NASNI IW and OW

Naphthalene at the NASNI IW and OW is ultimately (1) sold as part of the oil recovered from the NASNI OW; (2) discharged to a City of San Diego publicly owned treatment works (POTW) (separately from the NASNI IW and OW); (3) disposed of in spent carbon from the NASNI OW and IW; or (4) disposed of in sludge generated from the treatment processes (separately from the NASNI IW and OW). Naphthalene present in wastes entering the NASNI OW and IW from offsite must be accounted for in the naphthalene release calculations, as well as waste from non-exempt operations onsite. Naphthalene present in wastes entering the NASNI OW and IW from exempt onsite operations does not need to be addressed. However, distinguishing offsite from onsite waste quantities as well as exempt from non-exempt quantities is an exercise likely to produce specious results, given the wide variety of wastes managed at the NASNI IW and OW.

Therefore, all releases of naphthalene from the NASNI OW and IW are accounted for using the data presented in Section 6.8, as follows:

- 2020 naphthalene recovered from the NASNI OW and sold = 3,000 lb (not reported on the Form R because it is sold as a product)[25]
- 2020 naphthalene discharged to POTW from OW and IW = 35 + 0 = 35 lb
- 2020 naphthalene sent offsite in OW and IW sludge = 0.1 + 0 = 0.1 lb

Naphthalene was not detected at levels above 0.5 lb in the other NASNI OW and IW exit streams

9.3 Naphthalene Sent Offsite in Absorbent, Fuel Filter, and Fuel Waste

Waste absorbents, and unused fuel/oil/petroleum, oil, and lubricant (POL) waste will contain a small quantity of naphthalene. Absorbent waste and POL debris are sent offsite to U.S. Ecology, LLC in Beatty, Nevada (NV). Unused fuel/POL waste is sent to the NASNI OW for processing with other oily wastes, and any naphthalene present is accounted for in Section 9.2 calculations. However, some unused oil/POL waste is sent to Temarry Recycling in Mexico.

Only naphthalene present in waste that was generated from non-exempt activities must be addressed. Non-exempt activities generating absorbent, fuel filter, and fuel wastes include the following:

- NAVSUP FLC Fuels Division – assume 8.3% of this waste is non-exempt (Section 9.1)
- AIMD JETCs – 100% of this waste is non-exempt
- AIMD 900 Shop – GSE Maintenance – 25% non-exempt (Section 6.2.2)

MMEC Group compiled waste data provided by NES to quantify offsite transfers of absorbent, fuel filter, and fuel waste from these organizations, and then estimated the naphthalene content in the wastes.

NES data indicate that 424 lb of waste absorbents (waste profile HT8A) were generated by the NAVSUP FLC Fuels Division, and 108 lb and 3,551 lb were generated by the AIMD Test Cell and GSE Maintenance shops, respectively. Assuming that JP5 comprises 50% of the absorbent waste weight, the amount of naphthalene in non-exempt absorbent waste is estimated as follows:

- [(0.083 x 424) + 108 + (0.25 x 3,551)] lb waste x 0.5 lb JP5/lb waste x 0.0037 lb naphthalene/lb JP5 = 1.9 lb naphthalene (U.S. Ecology)

NES data indicate that 0 lb of “free-flowing POL debris” absorbents (waste profile HP24) were generated by the NAVSUP FLC Fuels Division, and 47 lb and 1,845 lb were generated by the AIMD Test Cell and GSE Maintenance shops, respectively. Assuming that JP5 comprises 50% of the waste weight, the amount of naphthalene in non-exempt “free-flowing POL debris” absorbent waste is estimated as follows:

- [(0.083 x 0) + 47 + (0.25 x 1,845)] lb waste x 0.5 lb JP5/lb waste x 0.0037 lb naphthalene/lb JP5 = 0.9 lb naphthalene (U.S. Ecology)

NES data indicate that 897 lb of used oil/POL waste (RP12) were generated by the NAVSUP FLC Fuels Division in 2020, and 1,700 lb and 7,639 lb were generated by the AIMD Test Cell and GSE Maintenance shops, respectively. Assuming that the naphthalene concentration in the

[25] Discussion held during the December 2019 CECOS DoD TRI Training Course.

used oil is the same as the concentration in JP5 (0.37%), then the amount of naphthalene shipped offsite in this waste stream is estimated as follows:

- [(0.083 x 897) + 1,700 + (0.25 x 7,639)] lb waste x 0.0037 lb naphthalene/lb waste = 13.6 lb naphthalene (Temarry Recycling)

9.4 Naphthalene Lost to Water

Small, daily leaks and spills of JP5 can be expected during fueling operations. No significant/reportable spills of JP5 were reported in 2020, according to the NAVSUP FLC Fuels Division.[26] Although small leaks and spills are unavoidable, none of these non-exempt fueling operations are near water and any spills would be contained and cleaned up prior to loss to storm sewers. Thus, the amount of naphthalene lost to water would be 0 lb/year.

9.5 Other Non-Exempt Naphthalene

The HAZMIN Center data indicate 2 lb of naphthalene used in 2020 at NASNI by various organizations on base in cleaning compounds. It is estimated that 2 lb of naphthalene releases to air (fugitive sources) resulted from use of these materials.

As presented in Section 8.0 (Tables 15 and 16), 1.4 lb of naphthalene are formed as combustion byproducts and released to air from point sources.

9.6 Naphthalene Form R Summary

Naphthalene releases and offsite transfers estimated in Sections 9.1 through 9.5 are summarized below by the Form R sections in which they must be reported. For example, Section 5.1 of the Form R contains the sum of all non-exempt, fugitive air releases of naphthalene from NASNI.

5.1 Releases to air (fugitive/non-point source) = 3 + 2 = 5 lb
5.2 Releases to air (stack/point source) = 3.6 + 1.4 = 5 lb
5.3.1 Releases to water = NA
6.1 Transfers to POTW = 35 lb
6.2.1(a) Transfers to offsite locations – U.S. Ecology (M65) = NASNI OW/IW sludge = 0.1, which rounds to 0 lb
6.2.1(b) Transfer to offsite locations – U.S. Ecology (M90) = waste absorbents + free-flowing POL debris = 1.9 + 0.9 = 2.8, which rounds to 3 lb
6.2.2 Transfers to offsite locations – Temarry Recycling (M56) = waste oil = 13.6, which rounds to 14 lb

10.0 FORM R CALCULATIONS – METHYL ISOBUTYL KETONE

10.1 FRCSW Methyl Isobutyl Ketone Releases

Methyl isobutyl ketone is used at FRCSW as a wipe solvent in painting operations. It is also present in various paints and adhesives.

In 2020, 25,139 lb of methyl isobutyl ketone were used by FRCSW. Most of this material leaves the facility in spent solvent and air emissions. FRCSW personnel prepared the following estimates:[27]

- Methyl isobutyl ketone shipped to Temarry Recycling for energy recovery = 4,107 lb
- Total air releases = 25,139 – 4,107 = 21,032 lb methyl isobutyl ketone

[26] Email from Gilbert Perez, NAVSUP FLC Fuels Division Contractor March 30, 2021.
[27] Release calculations provided by Dustin Martinez of FRCSW on May 25, 2021.

- Fugitive air emissions = 0.2 x 21,032 lb = 4,206 lb methyl isobutyl ketone
- Point source air emissions = 0.8 x 21,032 lb = 16,825 lb methyl isobutyl ketone

10.2 Methyl Isobutyl Ketone Releases from the Remainder of NASNI

In 2020, 63 lb of methyl isobutyl ketone were used in paints, solvents, and adhesives obtained through the HAZMIN Center at NASNI. It is estimated that these quantities of methyl isobutyl ketone (totaling 63 lb) were released to air from fugitive sources.

10.3 Methyl Isobutyl Ketone Form R Summary

Methyl isobutyl ketone releases and offsite transfers estimated in Sections 10.1 and 10.2 are summarized below by the Form R sections in which they must be reported. For example, Section 5.1 of the Form R contains the sum of all non-exempt, fugitive air releases of methyl isobutyl ketone from NASNI.

5.1 Releases to air (fugitive/non-point source) = 4,206 + 63 = 4,269 lb, which rounds to 4,300 lb
5.2 Releases to air (stack/point source) = 16,825 lb, which rounds to 17,000 lb
6.2.1 Transfers to offsite locations –Temarry Recycling = 4,107 lb, which rounds to 4,100 lb

11.0 FORM R CALCULATIONS – LEAD FROM NASNI SAR

TRI-DDS was used to support TRI release calculations for the NASNI SAR. Based on munitions type and usage quantities, TRI-DDS calculates chemical-specific air releases and non-air releases for ranges using DoD-developed emission factors, mass balance assumptions, and munitions constituent data.

11.1 Air Releases from the NASNI SAR

The air releases value is the amount of chemical that can be expected to be released to air either as a point source (indoor range activity) or fugitive source (outdoor range activity). Because the NASNI SAR is outdoors, all air emissions are reported as fugitive or non-point air releases on the Form R. Per TRI-DDS instructions, metal air release estimates are based on mass balance approach, or Code C, on the Form R.

Based on the munitions usage data, TRI-DDS indicates that air releases of lead from the NASNI SAR were 0 lb during 2020. Therefore, because all range activities took place outdoors, fugitive or non-point air releases were reported to be 0 lb on the Form R.

11.2 Non-air Releases from the NASNI SAR

Potential chemical releases to land or water and/or transfers offsite are estimated using the non-air releases quantity from TRI-DDS, augmented with user knowledge regarding the type of range, use of bullet traps, and range clearance activities performed during the reporting year. If bullet traps are 100% efficient, releases to land are assumed to be 0 lb, and the amount recovered is deducted from the non-air releases quantity. If clearance activities are conducted during the reporting year, this information is used to estimate quantities of TRI chemicals transferred offsite, further reducing the non-air releases quantity. If there are no other environmental release vectors (e.g., to water), the remainder of the non-air releases quantity would then be reported as released to land – other disposal (Section 5.5.4 of the Form R).

The NASNI SAR is an outdoor range (pistol and rifle) with an earthen berm backstop to capture projectiles.[28] TRI chemicals present in the projectiles are considered released to land in this situation.[29] TRI-DDS calculated 6,927.5 lb of lead non-air releases for the NASNI SAR in 2020. This quantity is reported as released to land on the NASNI SAR Form R.

There were no range clearance actions in 2020, and no lead-bearing wastes were removed from the range during the year. The range berms were last cleared of lead in September 2012, and there may be a clearance effort in the next few years. Based on the RY2019 TRI documentation report for NASNI, an estimated 66,277.5 lb of lead were present in the berms as of the beginning of 2020. Adding this quantity to the amount fired in 2020 yields 73,205 lb of lead estimated to be contained in the berms at the beginning of 2021. This value should be used to estimate offsite transfers of lead when completing the Form R for RY2020 or future years when the next range cleanup occurs.

11.3 NASNI SAR Lead Form R Summary

5.1 Releases to air (fugitive/non-point source) = 0 lb
5.2 Releases to air (stack/point source) = not applicable
5.5.4 Releases to land = 6,927.5 lb

12.0 FORM R CALCULATIONS – LEAD FROM REMAINDER OF NASNI

12.1 FRCSW Lead Releases

FRCSW has a lead foundry in which lead weights, ballast, and dies are cast. Lead and lead-antimony alloy weights and dies are turned in for recasting into new weights and dies for local use. A small portion of the 6% lead-antimony alloy is used as chrome plating anode material.

In 2020, 1,927 lb of lead were melted and cast into articles at the FRCSW foundry. The use of lead in FRC foundry operations has decreased significantly in recent years and may cease altogether in the near future. The foundry was operational for a short period in 2020. FRCSW personnel prepared the following estimates:[30]

- Lead shipped to the Temarry Recycling facility in Mexico, for reuse = 82 lb
- Lead shipped to U.S. Ecology facility in Beatty, NV, for disposal = 519 lb
- Lead shipped to Kinsbursky Brothers in Anaheim, CA, for reuse = 689 lb
- Total air releases (from Clean Air Act Amendments Title V calculations) = 0.98 lb lead
- Fugitive air emissions = 0.2 x 0.98 lb = 0.2 lb lead
- Point source air emissions = 0.8 x 0.98 lb = 0.78 lb lead
- Quantity recycled onsite = quantity melted and cast = 637 lb lead

Per FRCSW personnel, the lead sent to the U.S. Ecology facility was in lead slag from the FRCSW foundry. This material had traditionally been sent to DLA Disposition Services for recycle, but a DLA Disposition Services policy apparently no longer allows for receipt of items containing toxic metals for recycle.

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[28] Earthen berms are not considered bullet traps per the distinction drawn between the two on page 3 of *How to Consider Munitions and Range Activities under EPCRA Section 313*, March 2011. This is an addendum to the Navy's *Getting Started with The Emergency Planning and Community Right-to-Know Act (EPCRA) – A Basic Guidance Document for Navy Facilities*, May 2009.

[29] From RY2007–RY2011, the NASNI Small Arms Range earthen berms were erroneously considered bullet traps, and the amount fired into the berms during those years was not included in NASNI Small Arms Range TRI estimate of Lead releases to land.

[30] Release calculations provided by Dustin Martinez of FRCSW on May 25, 2021.

12.2 Lead Releases from NASNI Areas Outside of FRCSW and the SAR

A total of 77.5 lb of lead were issued from the HAZMIN Center in the following items (exclusive of TRI-exempt batteries as discussed in Section 6.1):

- A total of 1.6 lb in motor oil.
- A total of 75.9 lb of lead in an anti-seize compound, which is used by three helicopter squadrons at NASNI. Only operation level maintenance is performed by these units which is covered under the TRI motor vehicle maintenance exemption.

SWRMC used 7.3 lb of lead in the abrasive blasting material “Kleen Blast.” It is assumed that 95% of the abrasive material is captured after use and sent offsite, while 5% is released to air during operations. The material not released to air is sent offsite to the Kleen Blast facility at 676 Moss Street, Chula Vista, CA. From there it is sent to cement kilns for reuse as aggregate material:

- 7.3 lb lead x 0.05 = 0.4 lb released to air
- 7.3 lb lead x 0.95 = 6.9 lb solid waste offsite transfer

Also, the following lead quantities were calculated for the NASNI OW and IW release vectors in Section 6.8:

- NASNI OW discharge to POTW = 0.5 lb
- NASNI IW discharge to POTW = 1.4 lb
- NASNI OW sludge = 0.7 lb (to U.S. Ecology, Beatty, NV)
- NASNI IW sludge = 4.1 lb (to U.S. Ecology, Beatty, NV)
- NASNI OW recovered oil = 1.9 lb (sold, not reported on Form R)
- Spent carbon = 0.0 lb

As presented in Section 8.0 (Tables 15 and 16), 0 lb of lead are released to air from point sources as a fuel combustion byproduct.

12.3 Lead Form R Summary for Remainder of NASNI

Lead releases and offsite transfers estimated in Sections 12.1 and 12.2 are summarized below by the Form R sections in which they must be reported. For example, Section 5.1 of the Form R contains the sum of all non-exempt, fugitive air releases of lead from NASNI. Note that release and offsite transfer estimates reported in Form R Sections 5 and 6 must be summarized by pollution prevention category in Form R Section 8.

5.1 Releases to air (fugitive/non-point source) = 0.2 lb
5.2 Releases to air (stack/point source) = 0.78 + 0.4 = 1.18, which rounds to 1.2 lb
6.1 Transfers to POTW = 0.5 + 1.4 = 1.9 lb
6.2.1 Transfers to offsite locations – U.S. Ecology, Beatty, NV (M65) = 519 + 4.8 = 523.8 lb
6.2.2 Transfers to offsite locations – Temarry Recycling, Mexico (M26) = 82 lb
6.2.3 Transfers to offsite locations – Kleen Blast, Chula Vista, CA = 6.9 lb
6.2.4 Transfers to offsite locations – Kinsbursky Brothers, Anaheim, CA = 689 lb
8.2.6 Quantity recycled onsite = 637 lb

13.0 FORM R CALCULATIONS – GLYCOL ETHERS

A total of 304 lb of glycol ethers were issued from the HAZMIN Center in the following items:

- A total of 299 lb in cleaning compounds and coatings used by helicopter maintenance squadrons at NASNI. These materials are used in operational level maintenance and are not reportable under the vehicle maintenance exemption.
- A total of 5 lb of glycol ethers were reported in batteries used by helicopter maintenance squadrons at NASNI. These are TRI-exempt batteries as discussed in Section 6.1.

A total of 5 lb of glycol ethers in various products were reported by PSNS as discussed in Section 6.5 with glycol ether releases to air (fugitive sources) resulting from use of these materials.

In 2020, 3,608 lb of glycol ethers present in various paints, solvents and cleaners were used by FRCSW. Most of this material leaves the facility in air emissions. FRCSW personnel prepared the following estimates:[31]

- Glycol ethers in waste sent to NASNI IW = 1,793 lb
    - Assume 99% of glycol ethers captured in IW wet carbon filter. No spent wet carbon was sent offsite in 2020.
    - Remaining 1% of glycol ethers to POTW = 17.9 lb
- Total air releases = 3,608 – 1,793 = 1,815 lb glycol ethers
- Fugitive air emissions = 0.2 x 1,815 lb = 363 lb glycol ethers
- Point source air emissions = 0.8 x 1,815 lb = 1,452 lb glycol ethers

As presented in Section 6.6, 17,200 gal of MILSPEC compliant AFFF containing glycol ethers were swapped out in fire suppression systems as NASNI in 2020. However,18,200 gal of waste AFFF were sent offsite in 2020.[32] Glycol ethers are assumed to be present in the waste AFFF at the same concentration as the new AFFF. Applying this concentration to the quantity of waste AFFF yields:

- 18,200 gal waste AFFF x 1.02 x 8.34 lb/gal x 0.20 lb glycol ether/lb of waste AFFF = 30,965 lb glycol ethers transferred offsite

According to data provided on the waste AFFF approximately 52% of was transferred offsite for incineration and 48% sent offsite for disposal. Applying the split to the quantity of glycol ethers in the waste AFFF yields:

- 30,965 lb glycol ethers in waste AFFF x 0.52 = 16,102 lb glycol ethers transferred offsite for incineration to Heritage Environmental Services.

- 30,965 lb glycol ethers in waste AFFF x 0.48 = 14,863 lb glycol ethers transferred offsite for disposal to U.S. Ecology.

5.1 Releases to air (fugitive/non-point source) = 5 + 363 = 368 lb, which rounds to 370 lb
5.2 Releases to air (stack/point source) = 1,452 lb, which rounds to 1,500 lb
6.1 Transfers to POTW = 17.9 lb, which rounds to 18 lb
6.2.1 Transfers to offsite locations – U.S. Ecology (M65) = 14,863 lb, which rounds to 15,000 lb

[31] Release calculations provided by Dustin Martinez of FRCSW on May 25, 2021.
[32] A 1,000 gal system as Fire Station 11 was drained but not refilled per request of fire chief, causing the additional quantity of waste AFFF to be disposed.

6.2.2 Transfers to offsite locations – Heritage Environmental Services (M95) = 16,102, which rounds to 16,000 lb

14.0 TRI FORM R REPORTS

The following five NASNI Form R reports for RY2020 will be submitted to USEPA and the State of California by July 1, 2021, via USEPA's Central Data Exchange (CDX).

- Lead
- Glycol ethers
- Methyl isobutyl ketone
- Naphthalene

One Form R report (lead) will be submitted for the NASNI SAR for RY2020.

15.0 KEY CHANGES FROM PRECEDING YEAR

For NASNI, the following significant changes occurred from the preceding year:

(1) Sodium dimethyldithiocarbamate was not a reportable TRI chemical in 2020 as it was for the 3 prior years. The quantity of Hi-Chem HMP used in 2020 at the NASNI IW decreased significantly, resulting in sodium dimethyldithiocarbamate quantities falling below TRI thresholds.

(2) TRI chemical category glycol ether quantities exceeded a TRI chemical threshold and required a Form R for the first time at NASNI in 2020. The addition of new AFFF (containing glycol ethers) to fire suppression systems in 2020 caused the change in reporting status for 2020.

(3) The decrease in lead foundry operations is the primary reason for the decrease in the quantity of lead recycled onsite; 637 lb in 2020 down from 2,286 lb in 2019. In contrast the quantity of lead sent offsite increased from 1,150.4 lb in 2019 to 1,301.7 lb in 2020 because of lead offsite transfers from FRC which could be in preparation for a shutdown of foundry operations altogether.

(4) MIBK releases to air increased from 20,000 lb in 2019 to 21,300 lb in 2020, because of a small increase in usage of MIBK as a wipe solvent at FRCSW. In contrast, a lower quantity of MIBK was shipped offsite in 2020 for energy recovery (4,100 lb) compared with 2019 (5,300 lb).

(5) A 16% decrease in munitions use at the SAR decreased the amount of lead reported as released to land from approximately 8,400 lb for RY2019 to 6,900 lb in RY2020.